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MAY 1985

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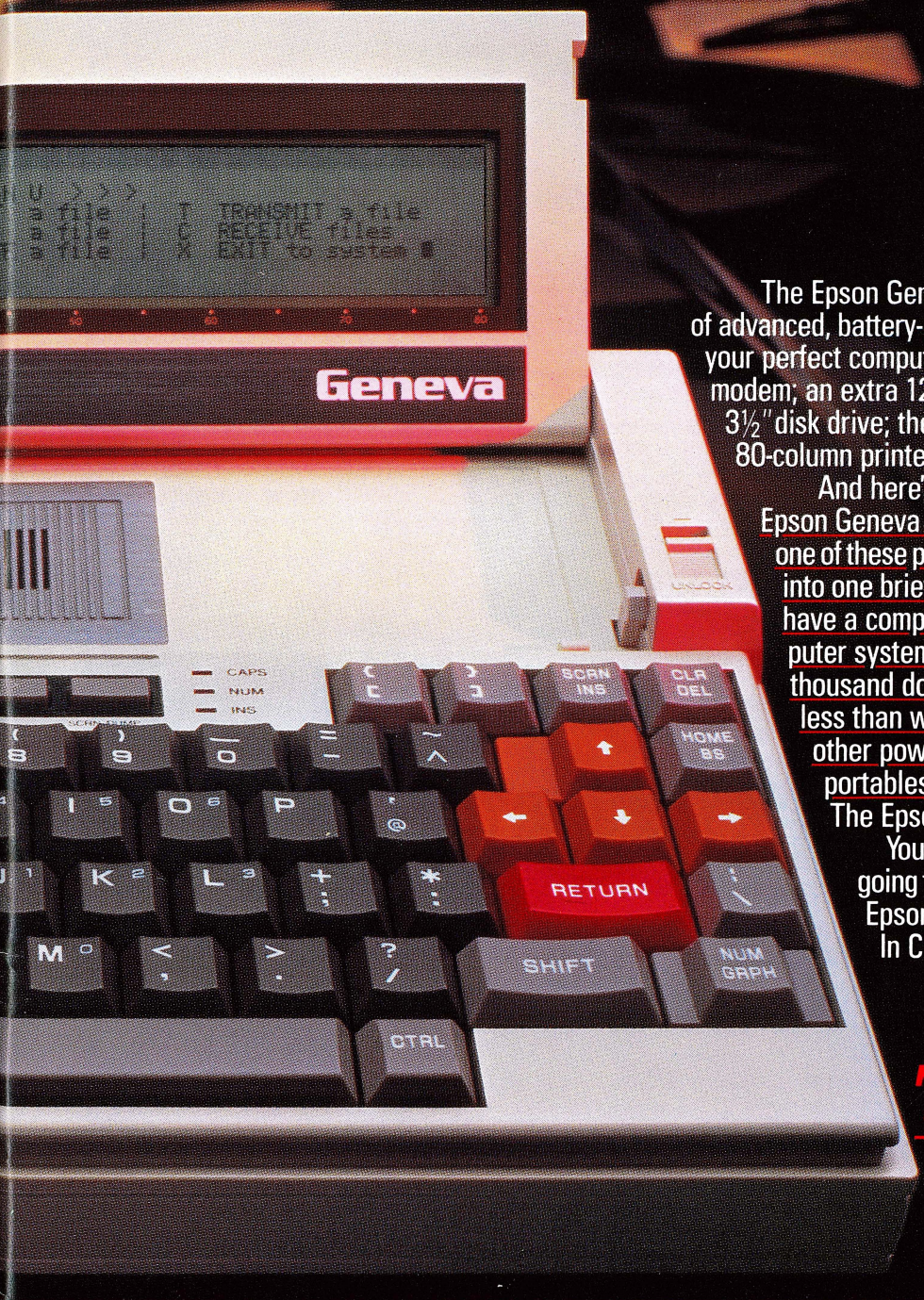

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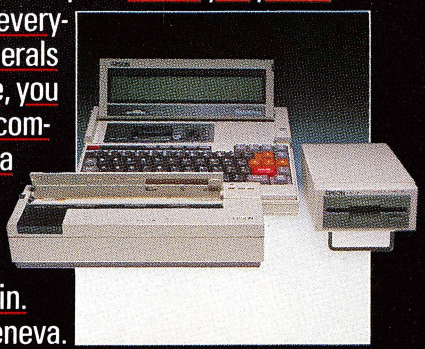

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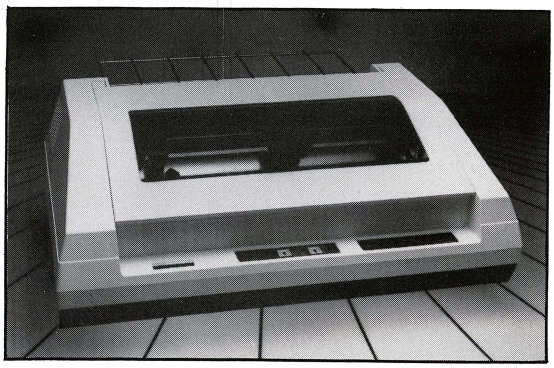

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Editorial

This issue features the QX-16 and a discussion of the MS-DOS environment and how it compares with CP/M. With the release of Valdocs 2 we will begin a regular section on user tips for the different modules in Valdocs. Next month you will find a tear out card with the common control features which are helpful within the Editor. Beginning with the June issue we will have feature articles about the different modules. The June issue will feature the Editor and July will focus on Telecommunications, both Valmail and the various telecommunications modules for the portable Geneva PX-8. Spreadsheets will be the focus in the August issue, with Valdocs spreadsheet and graphics, how it compares with other popular programs, as well as spreadsheets on the portable. We have articles on two keyboard redefinition programs (Smartkey II and XtraKey) and will look at the Valdocs 2DEFkey program in June.

Your feedback from the reader response card in the February issue has been an invaluable aid to us in planning the focus and scope for the future. Thank you.

Some news from our recent visit with Rising Star Industries and Epson America. R.S.I. have announced that their contract with Epson America expired April 30, 1985. Rising Star will continue to provide services to Epson, but on a non-exclusive basis.

The focus of their company has changed from that of Research & Development to Sales and Marketing. They will be marketing their own software products for end-users through direct sales. Their ad in this issue introduces the first of a series of software products planned for release within the next few months. Their company "will remain affiliated with Epson," Gale Carr, president of Rising Star announced, and they will continue to provide services to Epson, though on a non-exclusive basis. They will begin to attend equally to major OEM contracts and software products for end-users.

"We are committed to supporting the QX-10 owner and plan to increase our support staff as well as provide new software products," Chris Rutkowski informed us. The release of ValDraw and ValPaint will be greeted with excitement by many.

The company has signed an agreement with a major systems and components company, and another with a marketer of graphics work stations,who will be "acting as a national VAR for the color graphics software."

What Color? I have had a color version of the QX-10 operating now since January. The color graphics ability of ValDraw and ValPaint are spectacular. Costly? Yes, you can expect to pay somewhere around $1500 to get a color video board and monitor to work with Valdocs 2 and ValDraw and Valpaint. The reader survey we just conducted indicated that few users are interested in color.

Valdocs 2.xx? Rising Star is planning on releasing some updates to the 2.0 software. The scheduled updates will include the ability to bring graphics and pictures into the editor, in a cut and paste type of arrangement, as well as the ability to merge names and addresses from the cardfile. How soon these will be available is not known, and I would not venture to guess or project. We will let you know as soon as the products are ready to ship.

A further word about color. The QX-16 has color ability built-in for the IBM type environment, BUT NOT for the Valdocs and TPM system. If you want color capabilities for Valdocs and other TPM software you must replace your video board (inside the computer) with a separate color board, and use a compatible color monitor which has a horizontal frequency scan rate of around 25 khz. The IBM environment uses monitors with a scan rate of around 12-15 khz. What does this mean? If you remove and replace the video board on the QX-10 (or 16) with a special color one, you will be able to use

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DEALERS INQUIRES INVITED

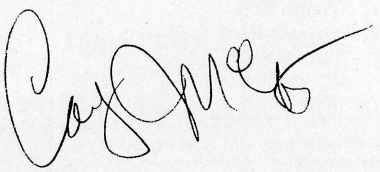
TPM in color. If you then try to use the QXPC board and run MS-DOS you will not be able to see anything intelligible on the monitor. The two are just not compatible. So, unless someone creates a way to have both your green screen video board and color board housed externally, and able to be switched, you will have to take your choice: if you install the high-resolution color capability for the TPM environment (Valdocs, ValDraw, ValPaint, RSI Basic) you will not be able to use MS-Dos on your QX computer. CP/M works well on the color board, thank goodness.

A note about Semi-Disk. The ram disk with the QX-10 and Valdocs 2 from Semi-Disk works beautifully. Valdocs 2 automatically goes out and looks at the expansion slots for the presence of boards. If it finds the Semi-Disk, voila! The overlays for INDEX, EDITOR, and SPREADSHEET are automatically loaded into it. This means the menu screens really fly as the ad suggests. The increase in speed is anywhere from twice as fast to ten times as fast, depending on the operations you are performing. The SemiDisk company is looking at, and working on, one for the QX-16, however, this will have to be a different board. Your board can be upgraded in memory to 2 Megabytes, and you can have up to four boards operating internally, giving you the capacity of 8M of RAM memory available. I strongly suggest you consider a battery backup for that kind of operation. The boards produced by SemiDisk have received the endorsement from Jerry Pournelle with Byte as the best and most reliable RAM disk boards.

HELP WANTED. We would like you to alert us to any bugs you may find in Valdocs 2 and any steps you discover to avoid or fix them. All new software, no matter how much it is tested can be expected to have some bugs. This does not mean there are any, nor does it imply that if there are some it is a bad reflection on the software. This is a way we can be helpful to each other. Either leave us a note on the EpsonConnection RBBS (313-823-1425) or drop us a line. We will forward all of this information to Rising Star Industries and Epson America upon receipt, and proceed to check it ourselves.

Larger screens for the PX-8. At the Anaheim Comdex show we had the opportunity to see a 25 line screen attached to a portable computer. The company, Axonix, mentioned that they are considering adapting it for use with the Geneva PX-8 as well.

NOTICE: We find it necessary to raise the subscription rates as of July 1st. The postage, paper, and printing cost increases will just barely be covered by this 15% increase. The new one year rate will be $29.00. Current subscribers will have the opportunity to renew early at the current rate of $24.00 before July 1st. Thank you.



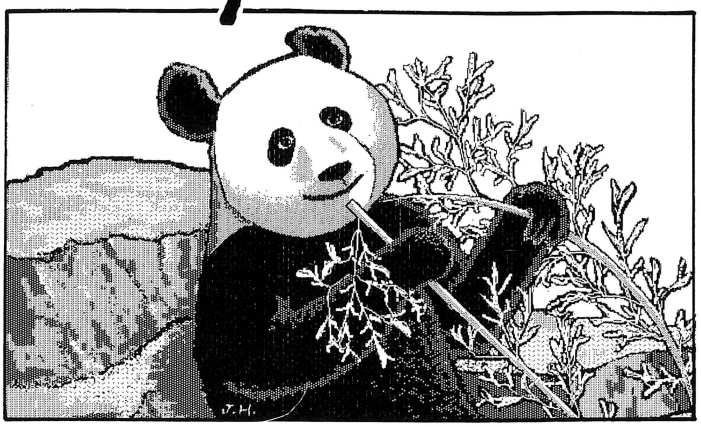
NOTE: Color QX-10 Upgrade

United Exim Systems, Inc is now making a color upgrade possible for QX-10 owners. Thier price of $1555 includes the high resolution color monitor, video board and Valdraw / Valpaint from Rising Star Ind. Interested parties can contact them at 2404 Wilshire Blvd. Los Angeles, CA 90057.

RISING STAR INDUSTRIES RELEASES

Includes Free Optical Mouse

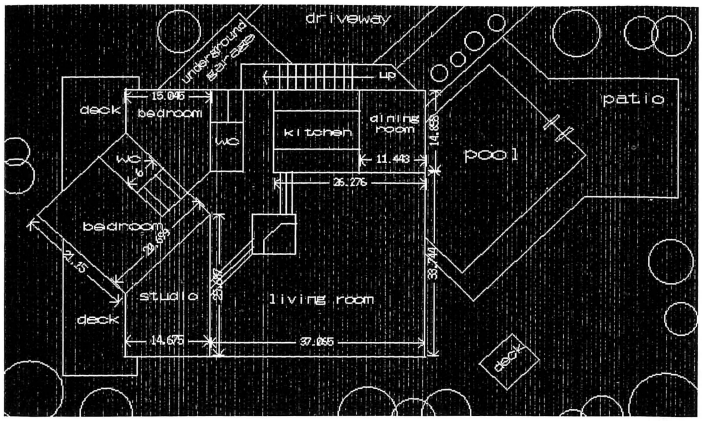
Valpaint



Unleash the Rembrandt in you; the electronic canvas is here. Even if you've never thought of yourself as an artist, Valpaint's versatility and ease of use allow you to create things you never thought were possible. From airbrush sketches to fashion design, from coloring books for your kids to professional electronic paintings, from interior decoration to illustrating your latest book, Valpaint gives you all the tools necessary to create the graphics you want. And Valpaint is as easy to use as Valdocs, which means your children can also use it—for homework assignments, arts and crafts projects, or just exploring their own artistic potential. No electronic paint package on any microcomputer offers you the power and versatility of Valpaint. Here are just a few of the features found in Valpaint:

• Freehand pencil • Eraser • Paintbrush • Airbrush • Record/playback function • Area fill • Geometric shapes • Multiple levels of zoom • Color separation capabilities • 128 colors on Epson machines equipped with color • Outputs to a variety of printers •

VALDRAW



With Valdraw you can quickly and easily design almost anything you want: electrical schematics, rooms, plans, buildings, or landscapes. Simple creation of circles, rectangles, French curves, or arcs makes it easy to create your designs. And the grid overlay option allows you to get accurate scaling. Once you've completed your drawing, you can pass it on to Valpaint for final detailing. Whether you're using it for professional level drafting or just for fun, drawing has never been this easy. And Valdraw has many more features, including:

• Mouse, digitizer, or keyboard interface • 32 levels of zoom • Templates of shapes may be created as single files • • Simple text entry • Automatically scaled dimension lines • • Block rotation • On-screen ruler option for creating scale drawings • Drawings can be edited and merged • • 7 colors available • Multiple printer/plotter support •

Both Valdraw and Valpaint run on Epson Desktop Computers and require Valdocs 2.

In the package, we've included everything you need to get started: Valdraw, Valpaint, two manuals, and a FREE Mouse Systems optical mouse (retail value of $175.00). For the next 60 days, you can get this entire package at a special introductory price of only $395.00. After the introductory offer, the price for the package will be $495.00.

To order, fill out the form below and mail it with your check or money order. Visa or MasterCard holders may order by calling 213-373-4421. This special introductory price is good only until June 15, 1985. For more information call 213-373-9112. Dealer inquiries invited.

Rising Star Industries, 25500 Hawthorne Blvd., Suite 2000, Torrance, CA 90505

PLANNED SHIP DATE MAY 15

EC-5

Please send me _____ copies of Valdraw/Valpaint at ~~$495.00~~ ea.
Special Introductory price until June 15 @ $395.00 ..... TOTAL _____
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GRAND TOTAL _____

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MC/VISA # _____ EXP. DATE _____

SIGNATURE _____ DATE _____

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Letters to the Editor

Dear Carolyn,

We live aboard a boat. We're presently in Beaufort, S. Carolina and will remain here a few months. The purpose of the letter... A friend asked me what kind of computer I had, and when I said "Epson", he said that he had an IBM but never heard of "Epsons" (standard response). I came up with an answer that has worked for me ever since. I looked a little surprised and said that he should find out more about them, they were made by the Seiko watch Co and that really got his attention. Your readers may enjoy having a response, and Epson could probably improve their sales by putting more emphasis on the Seiko connection.

Sincerely
Dave Wheeler
Estes Park, Co.

STATPAK UPDATED

Dear Ms. McCarthy,

As president of Micro/Research, I thank you for the review of our GUYL Statpak by Stephen L. White in the January 1985 edition of the EpsonConnection.

The GUYL Statpak reviewed was version 1.0. The current version, 3.0 has many more features including HELP screens for all analyses, consolidation of databank and keyboard entry modes, and is completely menu driven. Mr. White is correct that the programs are presently geared toward psychologists and educators (behavioral sciences).

It was, however, disappointing to see that he neglected to mention that in the ANOVA programs provision is made for analysis of subject groups of unequal sizes — something not even available on most mainframes until very recently. Also no mention of the log-linear capability, or the fact that our statpak features three times as many nonparametric analyses than were listed in the feature list for the Statistician. We do appreciate that if a feature list were done for the GUYL Statpak such as was afforded to the Statistician, an additional page would have been required (56 analysis programs with many options within those programs).

Drew University of Madison, New Jersey reviewed many statistical analysis programs for the Epson QX-10 in order to provide a statistical package for their students and faculty. (Drew provides a QX-10 for each of their entering freshmen.) They chose the GUYL Statpak on the basis of its power and flexibility. We are in the final stages of completing an agreement with Drew to add a business and economic section to the Statpak (including time series analyses). Drew University will then publish the entire statistical package under their name. They have plans to provide a Hotline telephone support, and entirely new documentation. Under the terms of the agreement they will make available the improved support, documentation and updates to present GUYL Statpak users.

...We did not set out to produce a statistical tutorial program. We wanted to produce the most powerful and useful statistical analysis package available for micros. I think we have done that, and by teaming up with Drew University it will become not only the most powerful, but also the most complete.

Sincerely
Dr. J. F. Schmidt
President Micro/Research
Forest Ranch, CA

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BDS C is designed for use with CP/M-80 operating systems, version 2.2. or higher. It is not currently available for CP/M-86 or MS- DOS.

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EPSON: A SUCCESS STORY

Dear Editor:

You request for feedback has brought to mind that I should write to you about our successes with Epson, both in business and on a personal basis.

To put it all in perspective, we are a $50 million a year home building, general contracting, land developing, resort, and conference center organization. Our two major projects are the building of a new town, 35,000 population, near Washington, D.C. and a resort, conference center, home building operation in Pennsylvania. We have other smaller projects under development as well.

We have used computers for almost twenty years, being one of the first builders in the country to successfully use them, When we acquired our Pennsylvania project, we acquired with it a microcomputer already in place. We have tied this computer into our Gaithersburg office by modems.

We have over one thousand programs, all developed in house, which we have used with our mainframe. In addition, we have used word processors in our business. All of this means that we are fairly knowledgeable about electronic record keeping.

When we decided to use personal computers for auxiliary record keeping, we applied our expertise in our search for such computers. For two years, we looked for a PC that would do word processing, graphics, and spreadsheets, with ease of use by non-computer types. That brought us to Epson and only Epson.

I bought an Epson for personal use and experimented with it for four months before we bought the first Epson for business purposes. As well as being a financial type, I am also a novice writer, in the midst of rewriting a novel for the third time. Initially, the book had been written on a word processor, but is being redone on my Epson, using Valdocs. Since I am using line and one-half spacing and 12 pitch for this over six hundred page volume, the margins and page length had to be changed from normal. Thus my lines wrap beyond the screen. I still find Valdocs better for my temperament and use, though I hope that Valdocs 2.0 resolves the problem of screening squeezed type.

At the time of our first corporate Epson installation, our executive department installed an IBM PC against our recommendations. It has since been removed, too complicated for the very same person who can now use an Epson with ease.

Our Epsons are used for word processing in either Valdocs or WordStar, spread sheet analyses for projects covering twenty years in length and twenty million dollars in size, and graphic presentations of weekly resort proceeds. In addition, we do "what-ifs": projections using variables that might affect profits; and other cash flow or varying projections for which our mainframe is not programmed.

At Hidden Valley, Pennsylvania, we maintain a data base of 25,000 names which we use for customer profile purposes, as well as mailings. Two of our Epsons operate on floppy disks while the third is connected to a hard disk. Two industry data banks are available to the modems on our Epsons.

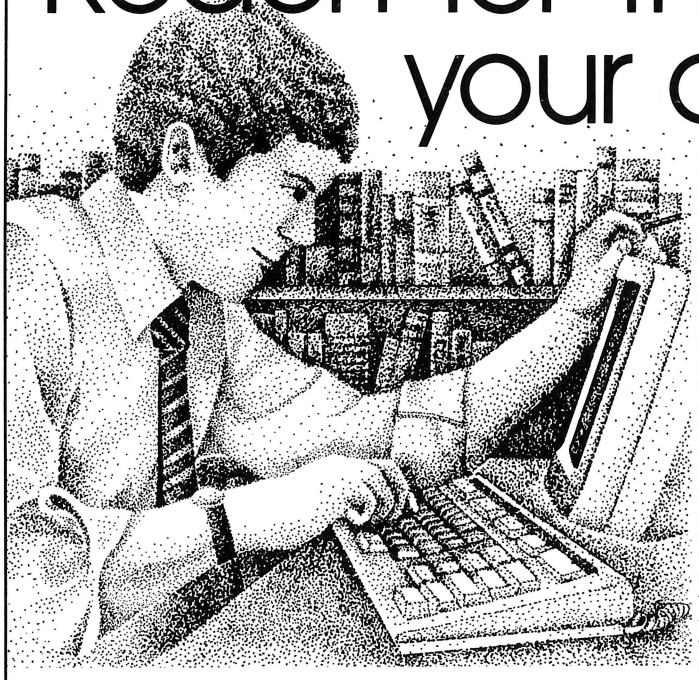
The assistant manager of our DP department now has an Epson computer. Our DP department manager, long a PC detractor, is so enthusiastic about the Epson, he encouraged his wife to install one in her office.

Our insurance agent, owner of a substantial agency in the Washington area, upon seeing our success, installed an Epson. A postcard dealer, one of the five largest in the United States, installed one after seeing what I had done with mine. He was recently voted "Man of the Year" by his peers in a national post card association, and he attributes this honor to his Epson and the effectiveness he has had with it.

So we look forward to Valdocs 2.0 and to the QX-16. We continue to find new adaptations for our Epsons, long ago having paid for themselves. But we have held off an expansion of our Epson installations until the proposed improvements are available. We would rather wait for Epson updates than desert to other computer brands which we feel are not as easy to learn, nor as cost effective.

Sincerely
Paul P. Gordon
Senior Vice President
Administration and Finance
Kettler Brothers, Inc.
Gaithersburg, MD

Reach for the height of your craft...



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Use as much of the power as you feel comfortable with. KAMAS is menu-driven with over 100 on-line help screens. But you can also open the hood to find a high performance programming environment with the additional horsepower you may need to get the job done. An active user community and the KAMAS Report newsletter keep you in touch with the latest KAMAS applications.

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CP/M BEGINS

PART II

by Carolyn McCarthy

INSERT DISKETTE . . .

This message will flash intermidantly on your screen if you try to start up your computer with a disk which has no operating system on it. The operating system tells your computer how to deal with programs, disk drives, your printer, you, etc. You received several different operating systems with your Epson QX-10: TP/M - (the operating system for Valdocs) CP/M, and MS-DOS (if you have the QXPC Titan board.) These operating systems are copyrighted by the companies which developed them. When a company creates a new software program, it will require an operating system to allow a computer to run it. Most developers of programs for CP/M or MS-DOS computers do not own or have the rights to the operating systems, consequently, when they sell you a program to run on your Epson, they are depending on your already owning software with the necessary operating system (which came with your computer).

You have a couple of options available to you for running programs on disks with no operating system. You can be using Valdocs and place the disk in the B drive (remember to use control M, change a data disk option if you are changing disks). When you press the MENU key you will see an option RUN AN APPLICATION PROGRAM, when it asks what drive it is in, indicate B, and then supply the name of the program. Another option is to EXIT to TPM from this same MENU in Valdocs, and go to the B (right) drive by typing the following at the A>

A>**B:**<CR>

(do not type in <CR> this indicates you should press your RETURN key).

When you see the B>, you can type in the name of the program you wish to run, and off you go.

These two options involved using the TP/M operating system with

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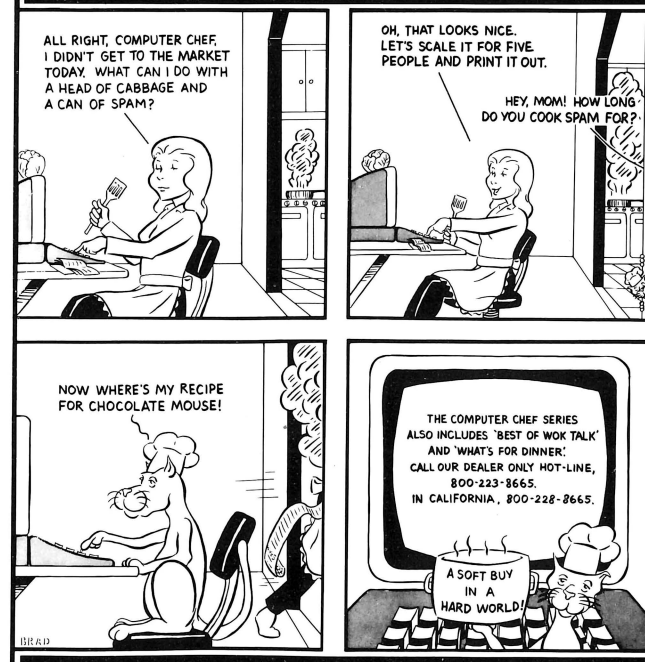
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Valdocs to run the program. An alternative is to use the CP/M system you received with your computer. To do this, place the CP/M 80 disk in your A (or left) drive, and your program disk in the B (right) drive, and boot up your computer. After CP/M is loaded, you will see an A>, follow the instructions above on going to the B drive, and run your program by typing in the name followed by a return.

PUTTING THE OPERATING SYSTEM ON YOUR PROGRAM DISKS

It is very convenient to have an operating system on all your program disks, you can just put that ONE disk in the A drive, and you are all set. The only disadvantage I can think of is that with the newer CP/M B releases, when you copy the operating system you also have to copy a file called CPM2.SYS which takes up room (52K with B 2.20, and 46K on B 2.25) on the disk you copy it to, and leaves less space for other files. There are various ways to copy the system to your disk, and this depends on the version of CP/M you have. With the earlier releases of CP/M, you type in COPYDISK at the A and it will prompt you from there. With the more recent programs, you press the COPYDISK key on your keyboard, and you will have several options. You can choose the option to copy the SYSTEM TRACKS ONLY to put the system onto your program disk. Once the system is copied to the disk, you can boot up with that disk alone.

COPY PROTECT TAB

When you purchase a box of disks you usually get labels, and some small silver-grey stickers. These stickers will protect your disks from being erased accidentally when you are using them in the computer. Each of the disks has a small cut out notch on one side. Fold this grey sticker over the notch and you can still copy and use the disk, but you cannot write any files onto it, or use the ERAse command to erase them. It is a good idea to put this tab on your original master CP/M and MS-DOS disks before copying them. ■

NOTE: *In the past issue we started with a CP/M Begins article. There was one misprint which should be noted. To get the ^ character to send control codes to your printer you need to press the CTRL key and while holding it down, press the P.*

Disk of the Month

EC-10 This month's disk contains ZCPR1. Briefly, ZCPR replaces part of your CP/M B2.25 operating system and gives you more functions and flexibility than the standard CP/M system. For more detailed information on ZCPR, please read the ZCPR article in this issue. This disk contains all necessary documentation and installation procedures to install ZCPR on your CP/M B2.25 system disk. Also included on this disk is the QXBANNER.BAS program, which is listed in this month's issue. These public domain software programs are provided on a quality diskette and the price does include postage and handling. Please be sure to indicate the disk order number (EC-10) with your check. **To order the Disk of the Month, please send $15 to the EpsonConnection, P.O. Box 14027, Detroit, MI 48214, Attn: Disk Service Dept.**

Disclaimer: All of the programs and documentation on this disk are known to be public domain and no warranties are expressed or implied. There are no guarantees with public domain software. All of the programs have been tested on the Epson QX-10, and are known to run. Public Domain programs are programs written by other users, for public use at little or no charge, other than the charge for mailing and materials. **Note:** We imply no similarity, or advise any comparison, between public domain software and software that is commercially produced. A beginning knowledge of CP/M is also recommended to utilize this software.

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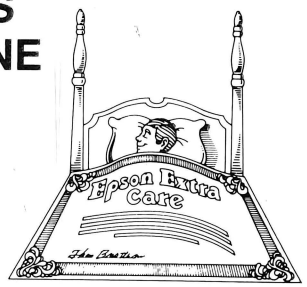

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Questions & Answers

Q I have an Epson QX-10 equipped with both a QX-PC2 card and a Comrex CR-103 internal modem. How can I link the QX-PC2 board with the CR-103 modem so that I can communicate with our IBM-PC network at work?

Todd Olson
Pelham, NY

A *You can't. A technician at Titan Technologies informed us that it is impossible for the QX-PC2 board to access any internal serial cards and that there are no plans on ever configuring the QX-PC card to allow this. You must either purchase a modem that uses the QX-10's serial port, or access your IBM-PC network with your QX-10 in the 8 bit mode.*

Q I hear that the QX-16 is to be released with 512k of memory, as opposed to our current 256k. Will there be memory upgrade kits or chips available to allow us QX-10 owners to move up to the world of 512k?

Mark Donahoe
Mound, MN

A *The stock QX-10 is an 8-bit machine, which only recognizes 64k of the available memory for application program operations. The "extra" 192k can be utilized as a RamDisk, or may be used to perform "background" operations (using TPM). It would be impractical to upgrade a Z80 system to 512k since this memory cannot easily be utilized or accessed. The QX-16 is both an 8-bit and a 16-bit machine, and in the 16-bit mode it can utilize the entire 512k for application programs. If your QX-10 is equipped with the optional QX-PC2 card (16-bit), it can be upgraded to 512k.*

Q I am looking for some public domain games for my kids. What needs to be done to convert some of the many games published in magazines for the Apple and Commodore computers. Can't any of them be run?

Philip M. Block
Newington, CT

A *There are many games in the public domain for the QX-10. Games can be found on many EpsonNet RBBS's, obtained through Epson User Groups, and some of our "Disk-of-the-Month" disks are dedicated to games (EC-3 September, EC-4 October, and EC-5 November). There are many programs that run on Apples and Commodores that can also run on the QX-10. The only catch is that these games must be "plain vanilla" BASIC programs, and these programs cannot contain operations that are exclusive to Apples, Commodores, etc. Such operations include PEEK and POKE statments, disk I/O operations, and graphics.*

Q In the article "To Clean Or Not To Clean", (Epson Connection, February) instructions state that you should "Insert the cleaning disk and turn on the drive for 30 seconds". It fails to tell how to turn on the drive. As far as I know, my QX-10 drives have no switch or other device that allows me to turn them on and off selectively.

Along this line, I have heard that disk drives can get out of alignment, whatever that means. Should the drives be aligned periodically? If so, how often? How can one tell if they are out? Is there a special test disk of some kind?

Last December I bought your EC-5 disk which has several games. They mostly work ok, but the chess and tic-tac-toe do not work at all. The chess game puts out gibberish and the tic-tac-toe will not accept an input. If you could help me out here I would appreciate it.

Tom Zurflieh
St. Petersburg, FL

A *You are correct, there is no external disk drive switch that allows you to turn the drive on and off. To "turn on" the left drive, simply insert your cleaning disk into the left drive, reboot you computer, and let it repeat the "INSERT DISKETTE" message for 30 seconds. To clean the right drive, boot up your system with CP/M, and insert the cleaning disk into the right drive. Enter "B:" and press <RETURN>. This will turn on the right drive, but for only a second or two. CP/M will return an error message, however, continue to tell the CP/M error message to (R)etry, and continue this process for 30 seconds.*

Yes, disk drives can get out of alignment but usually such damage would be the result of dropping or jarring the computer. Drive alignment need not be performed unless your computer will not read disk, or you frequently get read and write errors. Such maintenance must be performed by an authorized Epson Service Center.

The chess game on the EC-5 disk does work correctly, provided you follow the instructions in the Z80CHESS.DOC file. We did not include a tic-tac-toe game with that disk, which explains why it won't accept input.

Q I encounter two small problems while using Valdocs. First, Valdocs always prints documents in Pica (10 characters per inch). Sometimes I want my documents in Elite (12 characters per inch), or 15 characters per inch, or even denser formats. What can I do?

Ian Lin
Foster City, CA

A *You need to obtain a printer setup utility. There are many of these programs available on EpsonNet RBBS systems, or through user groups. Store the printer setup program on your Valdocs data disk, and run it as an application program from Valdocs BEFORE you print your document. Once your printer has been setup, proceed to PRINT your document, but be sure that you do not select CORRESPONDENCE QUALITY from the print menu. If you did, it would override the previous command from the setup utility.*

Q Do you have the source code for SD.COM? DO you have any additional financial programs other than those on EC-3? I wish to print the directories of my disk on labels and need to know how to access the DIR in a BASIC program to format the label.

Jim College
Skiatook, OK

A *If you have a modem, you can download the source code to SD.COM from our RBBS. Our March disk-of-the-month contains many business and financial programs, or again, you may download some of these programs from our RBBS. The only way to access the disk directory from MBASIC is through the FILES command. Unfortunately, MBASIC cannot store the directory information into memory variables, thus you cannot manipulate the directory info. The only solution would be to create a machine language subroutine that stores the directory into variables that MBASIC can access, and CALL this routine from your MBASIC program. Perhaps the SD.COM source code can provide this routine.*

ZCPR Enhances your CP/M 2.25 Operating System

By Allen Howell

If you frequently use CP/M with your computer, you'll find that ZCPR may just be the answer to your dreams. Before I explain what ZCPR is, first I'll mention some basic characteristics of CP/M.

CP/M is divided into three basic modules. These three modules are the BIOS, the BDOS, and the CCP. The BIOS is the Basic Input/Output System. This is the module that must be customized for each new 8 bit computer that is made. The BDOS is the Basic Disk Operating System. This module is responsible for organizing your directories, disk space, and other disk drive housekeeping tasks. It communicates to the computer hardware through the BIOS. The BDOS is basically the same on all CP/M machines, and is the module with which all application software communicates. Finally, the CCP, which is the Console Command Processor. This module is what you as a user communicate with. The CCP provides you with resident (built-in) commands. These commands are DIR, REN, TYPE, ERA, USER and SAVE.

ZCPR is a complete replacement program for CP/M's CCP. ZCPR's most outstanding feature is that it supports a more sophisticated command-search hierarchy. Those of you who are familiar with TPM certainly appreciate the fact that programs you wish to run do not have to be stored on the drive, or user area you are currently logged into. With ZCPR, all direct input is first checked against ZCPR's resident commands. If the input is not a resident command, then ZCPR will check the user area you are under. This is where the similarities between ZCPR and CP/M end. If your command is not found on the user area you are under, ZCPR will then check the default user area on the currently logged in drive. If your command is still not found, ZCPR will check the default user area (usually 0) on drive "A" of your system. If the command is still not found, then the system will display your command with a '?', like CP/M does. ZCPR checks twice as many areas as CP/M.

How can this be of advantage to you? If your system is floppy disk based, then this aspect of ZCPR may well be a luxury; if you operate a hard drive based system, it should be considered a necessity. No more wasted space with duplicate commands or programs throughout all those user areas. You can leave such common programs as PIP, STAT, MBASIC, and STARTREK on drive A, user 0, and you can run them from any drive and/or user area without physically moving them into your area. Again, this saves disk space, and helps keep your user areas better organized and looking "cleaner".

The first thing I noticed about ZCPR is the system's prompt. CP/M's CCP displays the letter of the currently logged-in drive with a "greater than" sign beside it, such as "A>", "B>", and so on. This technique is basically acceptable, until you utilize different user areas. If you change user areas on a regular basis, it becomes easy to forget which one you are in, so, you have to re-type "USER x" (where 'x' represents the number), to make sure you are where you want to be. ZCPR includes the user area number with the system prompt. Therefore, upon booting your system with ZCPR, the prompt comes up as "A0>". If you were to log into user area 13, the prompt would then appear as "A13>".

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ZCPR enhances some of the existing CCP resident commands. Using TYPE with the CP/M's CCP, the file you TYPEd will scroll wildly across your screen, while you grapple with the CTRL-S keystrokes to pause the scrolling — only to find that you already passed the part you wanted to view. ZCPR automatically pauses a display after the screen fills. Simply press any key, and it will display the next "page". There may be those of you who don't want the TYPE command to auto-pause. ZCPR will disable auto-pause if you specify a " P" after the filename, i.e. "TYPE LETTER.DOC P".

Another modified command is ERA. The procedure is the same as the regular CP/M, except ZCPR displays the file(s) that are pending to be erased, then asks you if it's "Ok" to continue. Enter "N" to abort the command, or "Y" to confirm. This is an excellent precautionary measure when ERA is used with wildcards, and should prevent you from erasing the file that you thought was on the other drive.

DIR is basically the same, except that there are more spaces between the filenames, making it easier to read. The REN (RENAME) command, USER, and SAVE are basically the same, except that parameters for the SAVE command may be entered as octal or hexdecimal numbers.

If all this isn't enough, ZCPR also includes a few new built-in commands. LIST is basically the same as TYPE, except LIST directs the output to your LST: device (usually your printer). This is more practical than using PIP, or the TYPE command followed by CTRL-P.

DFU is a handy command that allows you to temporarily change the default user area number. DFU stands for Default User. Let's say you are working in user area 11, and the program you wish to run resides in user area 3. Normally, you would have to either move the program to your user area, or move it to user area 0 of your currently logged on drive. By typing in "DFU 3" in your user area, you now tell ZCPR to change it's default search area from user 0 to user area 3. Any commands you enter that are not found in your user area are now checked on user area 3 of your logged-on drive, and if that fails, it will check user 3 on the "A" drive.

ZCPR includes three built-in commands which are directed more towards assembly language programmers. The new JUMP command will "call" a subroutine (or program) already in memory. GO will execute the contents of memory starting at address 100H. This command is convenient if you accidentally exited your program and wish to return. Simply enter "GO" from the system prompt, and the last program you ran will appear instantly. GET is the opposite of the SAVE command. The GET command loads a file from disk into memory starting at a specified page.

This is version 1 of ZCPR, and easily replaces the CCP in any Epson QX-10 CP/M B2.25. The ZCPR.LBR file, which can be found on some EpsonNet RBBS, contains ample documentation, source code, and installation procedures. It is practically self-installed, thanks to Joel Stevens who created a SUBMIT file, which automatically inserts ZCPR into the CPM2.SYS file. If neither you nor your friends have a modem, ZCPR1 will be the feature of this months 'Disk-of-the-Month'.

There are currently three known versions of ZCPR. ZCPR was a group project by the "CCP-GROUP", which consisted of Keith Peterson, Frank Wancho, Ron Fowler, and headed by Richard Conn. Thank you, gentlemen, for providing us with an excellent operating system environment. Considering the features of version 1, it may be hard to imagine what could have been included in version 3. ■

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By Steve Stecklow

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Some people readily admit they are not great spellers. Others, like myself, insist they are, even though they surely would be humiliated in a high school spelling bee. But, can your Epson QX-10 improve your spelling? The answer is yes — if you have the right program. The Random House Proofreader is such a program. It is the best designed spelling checker I have seen. And, at $50, it is a bargain as well.

First, some general comments on spelling checkers.

There are many on the market. But although they all purport to do the same thing — search through a document and locate any spelling errors — they vary greatly in terms of features and performance. Some of them, in fact, are more trouble than they are worth.

A large dictionary is a critical element...

Besides being easy to use, a good spelling checker requires several essential features. Probably the most critical element is a large dictionary with which to compare the words in your text files. The larger the dictionary, the fewer correctly spelled words it will trip up on. And that means less work for you.

The fact is, the problem with poor spelling checker programs is not that they fail to catch misspellings, but that they flag too many correctly spelled words. To combat this, every spelling checker I have seen has the ability to accept new words in its dictionary, so that it will not keep pointing them out as possible errors. Not even the Oxford English Dictionary, for example, would recognize my last name — Stecklow — a word which appears in virtually every document I write. By adding my surname to a spelling checker's dictionary the first time I use the program, it will not try to embarrass me in the future with the news that I have incorrectly spelled my own name (unless I really screw up and do misspell it).

Your surname is one thing, but a decent spelling checker should know enough words from the outset so you don't constantly have to teach it simple, commonly used words. Yet many spelling programs possess this irritating problem. The weakest ones, are those that have built-in dictionaries 20,000 words or less.

Twenty thousand words may seem like a lot. In reality, though, it's very little. So little that it probably includes few adverbs (words that end in *-ly*), gerunds (words that end in *-ing*) or plural nouns. For example, a version of Peachtree's Spelling Proofreader that has a 20,000-word dictionary found 115 words it did not recognize in a 1,600 word document, when only 11 were actually *misspelled*. Among the words it tripped on were advertises, brighter, educating and lease.

Even a 45,000-word dictionary may be insufficient. Another 45,000-word version of the Peachtree program tested does not know the words inclement, specials and workmen. This means extra work for you since every time you check a document for spelling errors, you will be adding all sorts of common words to the dictionary. You are, supposedly, using a computer to make your life easier, not to compete with Noah Webster.

A second key element of a spelling checker program is the ability to display allegedly *misspelled* words in the context in which they appear in your document. For example, just seeing the word "Inc" does not necessarily indicate a *misspelled* word. It is possible that the word is an abbreviation at the end of a sentence and the spelling checker simply does not realize that the period completes not only the sentence but also the word. A good program should display the sentence on the screen with the flagged word.

A third feature that is especially nice to have in a spelling checker is the ability to "look up" the correct spellings of *misspelled* words. After all, unless it was a typing error, the chances are that if you *misspelled* the word, you don't know how to spell it.

A related feature would permit correction of misspellings in a document in the midst of the spelling checker program. Most spelling checkers only let you mark the errors. This means you have to go back to your word processor, retrieve the document, search for the marks, make the needed corrections and re-store the file. If you are working with Valdocs, I don't need to tell you how long all that can take.

A spelling checker program should also automatically create a back-up file of the original document, before it is checked for spelling. This is a must — just in case the program goes *berserk* and swallows your file.

The final consideration for a spelling checker is speed. You shouldn't have to wait forever for the program to read a document. However, speed must be measured against performance; a spelling

Works with almost any word processor.

checker that can race through a long text file in seconds but flags dozens of correctly spelled words, isn't impressive.

The Random House Proofreader (Version 1.16 with an 80,000-word dictionary), has all these features and more. It is extremely easy to use, works well on the QX-10 and can read documents written with almost any word processor, including Valdocs and WordStar. The program is also offered at the same price with speedier but smaller dictionaries (50,000 words and 32,000 words), but I strongly suggest you opt for the king-sized version.

To demonstrate how good this program really is, I ran a kind of Spell Checker Olympics on my QX-10 among the following programs: FIG 1

Results of Spelling Checker Olympics on the same 1600 word document

Software	Dictionary Size	Time	# Mismatches
Peach Tree	20,000	28 secs.	115
Peach Tree	45,000	58	68
Word Plus	45,000	60	54
Random House	80,000	127	30

:: : : : ::

I checked the spelling of the same document with each program — a 1,600-word magazine piece on satellite television I recently wrote using Valdocs. Ten *misspelled* words and one non-word were planted in the story.

The 20,000 word Peachtree program read the document in the shortest time: 28 seconds. But, it found 115 mismatched words, including numerous common ones. The program also does not show flagged words in context, cannot display correct spellings and does not permit correction of words in the midst of the program. Like all the programs, it does create a back-up version of the original file. It also offers on-screen help, a feature which the non-Peachtree programs lack.

The 45,000-word Peachtree version took 58 seconds to read the story and found 68 mismatches. Except for the size of its dictionary, it seemed identical to its sister program.

The Word Plus, which some computer owners maintain is the finest spelling checker program on the market, took one minute to read the document and found 54 mismatched words. The program does allow you to "view" the word in context, but only if you ask it each time. You can also ask to see the correct spelling — the program is uncannily accurate on this — and fixes the word directly in the document (or mark it if you so choose). Unlike the other spelling checkers, The Word Plus will not count the number of words in a document — a necessary chore for free-lance writers — unless you run a separate program.

The Random House Proofreader was the slowest in the field, taking 2 minutes and 7 seconds to proof read the document. But it found only 30 unknown words (the only word I felt it should have known was "specials" as in television specials). The program contains every essential feature I have listed, plus a few nice added touches, for example, if you try to correct a *misspelled* word with another misspelling, it will stop you. The other programs lack this ability.

The Random House Proofreader will always show the words it flags in context, if you so desire. When asked for a correct spelling, it offers about 20 possibilities. This can fail though, if your spelling is way off, or sometimes, only slightly wrong (it failed to find the correct spelling of "*repetition*," for instance).

The only real drawback I found with The Random House Proofreader, besides its slowness, is that the 80,000-word version takes up at least 268K on a disk. Placing the program on your Valdocs data disk, therefore, is not recommended. The best method I found was to put the program on a CP/M system disk. Then, after you write a document with a word processor, put the Proofreader disk in the A drive, keep your data disk with the document in the B drive and reboot the system. Instruct Proofreader to check the document in the B drive. (Remember that in the case of Valdocs files, the name of the document will be the Valdocs indexed file name, such as 85401001.VAL.)

And now, for my final test of Random House Proofreader, I will check this review. Back in a moment...

Uh oh. I *misspelled* **especially** (that was a typo, honest!), **berserk, repetition** and — I hate to admit this — **misspelled**. ■

Steve Stecklow is a reporter with The Philadelphia Inquirer and president of the Philadelphia-Area Epson Users Group.

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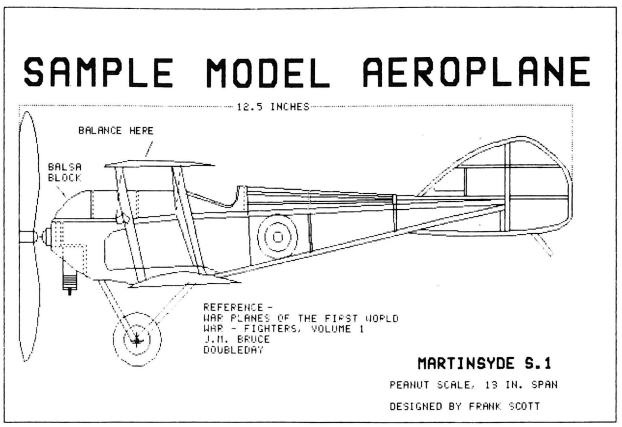

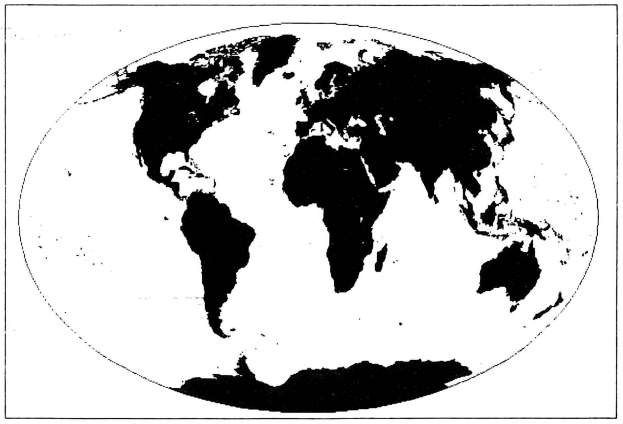

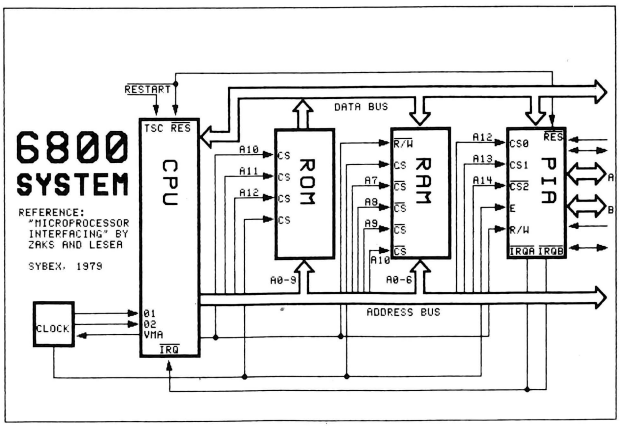

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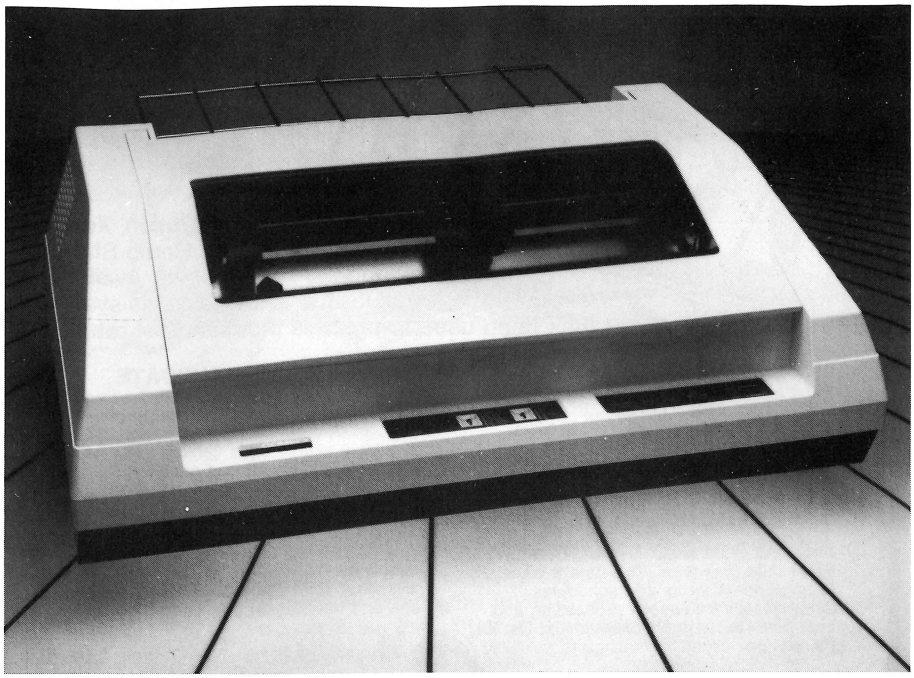
CR-420

By Allen Howell



SPEC SPOT

Product: Comrex CR-420 high speed, business printer.
Type: Dot matrix, 132 columns, 420 characters per second, friction and tractor feed, parallel and serial interfaces.
Price: $2495.00
Ease of Use: Excellent
Performance: Excellent
Documentation: Acceptable
Summary: A very fast, versatile, and heavy duty printer designed for the business environment.

At first, I was a bit skeptical about this printer. Why? Well, how could a dot matrix printer print at 420 characters per second without ramming its printhead through the side of its housing? Also, there are those of us who still question the quality of Comrex products, so why wasn't this printer marketed through Epson instead of Comrex? Epson markets all of its dot matrix printers, so why not this one? It's made by Epson. Is there something about it that does not fulfill Epson's quality control?

My experience with the CR-420 did not start off auspiciously. The first thing I noticed about this printer was its weight. Unless you are a big and burly person, you'll need help getting it out of the box. This baby weighs in at a whopping 60 lbs., so let someone else lift it if you have back problems. This is twice the weight of the LQ-1500.

> . . . features include the option to select different typestyles, as well as page length.

The biggest mistake was setting up this printer on a flimsy, casterless, previously broken printer stand. It seemed to support the printer, until we had to scoot the stand closer to the computer because the printer cable was too short. In the process of pulling the stand across the carpet, the whole stand collapsed and the printer fell through the remains of what used to be a printer stand.

After taking out the trash, we found a sturdier stand and hoisted the CR-420 onto it. With help from the User's Manual, we were able to perform a self-test. As on most of Epson's printers, you hold the On-Line button while powering on the printer. Immediately, we were all impressed with its speed, and how the printer would 'sing' as it automatically changed typestyles within the self-test.

Is it noisy? Well, that depends on what you compare it to. It is much quiter than the LQ-1500, and comparable to the noise level of the FX printers. That isn't bad, considering the speed at which the CR-420 prints.

Among the outstanding features of the CR-420 are the typestyle selection, and page length selection dial built directly on the front of the printer. This allows new and experienced users to set up the printer easily for whatever typestyle they desire. No more setting up your printer through software commands or programs (although you still can). Other controls built onto the printer include the ON-LINE, LF (line feed), FF (form feed), TOF SET (top of form set), and a RESET button. A paper feed knob allows easy insertions of single sheets of paper. Indicator lights include the ON-LINE, POWER, and PAPER EMPTY lights.

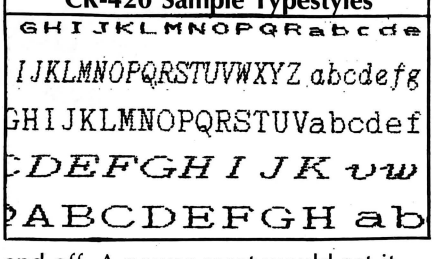
Other standard features include an 18k buffer, & serial and parallel interfaces. Paper may be fed in from the rear of the printer, or through the bottom. It will accept paper up to 15" wide, contains a built-in cooling fan, error detection upon power-on, and also has a print head thermometer. If the print head overheats while operating, it will automatically decrease its printing speed. We have run this printer for hours non-stop, and we have yet to see it slow down due to overheating.

Typestyles include Standard, Italic, High quality (correspondence), Italic High quality, Superscript/Subscript, Italic Superscript/Subscript, Wide, Condensed, and Graphic mode (which contains three densities).

Ribbon cartridges are similar to the RX and FX 100 series printer ribbon cartridges, but cost about 2.5 times as much (approximately $27 each).

Static electricity affects this printer more than any other computer device I have been associated with. Once, when I was fully charged, I touched the printer and suddenly, one of the drive motors inside it powered on. A co-worker touched it once and one of the indicator lights started flashing on and off. A power reset would set it back to normal, and these "shocks" have not seemed to affect the printer. Be sure to plug this printer into a properly grounded outlet.

CR-420 Sample Typestyles



Continued on following page

Despite the price of the ribbons, and the CR-420's erratic behavior with static electricity, the CR-420 is an excellent printer. We have not found any other major faults after 5 months of constant use.

The most amazing feature is its speed. We timed the printer to give you a better idea of just how fast it really is. A typical one page (60 line) file took less than 10 seconds to print in the draft mode. A program to print one complete (11x15") page full of X's was printed out in just over **27 seconds**, for a total of 8,712 characters printed. A little division revealed that it averaged about 322 characters per second. Since this number didn't even come close to the claimed speed of 420 characters per second, the same test was performed on the FX-100 and LQ-1500. It took the FX-100 **1 min. and 27 seconds** to fill a page full of X's, which boils down to an actual 100 characters per second. The LQ-1500 printed the page in about **1 minute**, and averaged 145 CPS. In summary, we would recommend this printer to any business in need of a good, heavy duty, fast printer. It contains most of the typestyles built into other Epson dot matrix printers, and its print quality, though not as good as the LQ-1500, is more than satisfactory. This is one tough printer. ■

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Northward Bound

QX-10 Joins Polar Expedition

by Franc La Clair

This is the first in a continuing series of feature articles about the Steger International Polar Expedition. The expedition team plans an unassisted dogsled run to the North Pole using many traditional methods and some innovative equipment including an Epson QX-10.

While most of us are just breaking out of the winter doldrums, shaking off the cold, and looking forward to Spring, the Steger International Polar Expedition is about to embark on the second leg of their "training" for a North Pole assault by dogsled.

The first phase of training for the six man polar team was a 5,000 mile, 5 month traverse of Canada and Alaska. The team set out on December 5, 1984, from Duluth, Minnnesota and will be reaching Point Barrow, Alaska, the northern-most point of the Continental U.S., about the time you read this article. Headed by Will Steger of Ely, Minnesota, the group will rendezvous on April 5, 1985, in Inuvik, Northwest Territories for the second phase, a "dress rehearsal" of the Polar run. The first leg of training was intended to "beta test" new, and some time-tested equipment, specially bred sled dogs, and for the physical conditioning of the team members.

During the second phase, the final two dozen dogs and equipment they will pull on the sledges will be selected while the team builds toward the final drive from Ward Hunt Island, to commence March 1, 1986.

The final drive to the North Pole from Ward Hunt Island will be totally unassisted in terms of re-supply and air reconnaissance. The six men and two dozen crossbred Greenland and Alaskan huskies will take two months to cross the frozen, Arctic Ocean. Pressure ridges of ice up to 30 feet high, temperatures of -30 degrees F to -50 degrees F, winds of 40-70 mph, and "leads" of open water, or breaking ice flows are some of the hazards they will encounter during the 500-800 mile journey. They will be using only compass and sextant for navigation in their effort to confirm Admiral Peary's historic achievement of 1909. Final confirmation of their arrival at the Pole will be made by aircraft and satellite.

The team members include Steger, a 21 year-veteran musher, Paul Schurke, co-director with Steger of Lynx Track Winter Travel School in Ely, Minnesota, and musher/journalist, Robert McKerrow, Director of the New Zealand Outward Bound School, Richard Weber a member of the Canadian National Cross-Country Ski team (presently vying for a berth on the World Cup Team), Robert Mantell, a veteran Alaskan dog-musher who accompanied Steger on an 18-month, 7500 mile, record dogsled run, and Vic Walsh from Great Britain, who directs the Pacific Crest Outward Bound School.

In addition to the numerous supporters of the expedition is Northwest Office Supply in Duluth, Minnesota who provided the team with an Epson QX-10 for data collection, storage, and manipulation. The team is gathering a tremendous amount of geological, physiological, and weather related data for analysis. Further, they are tracking supporters, suppliers, costs, expenses, equipment inventories, and almost anything else you can imagine as being remotely important to a project of this magnitude.

The National Geographic Society, a sponsor of the project, will be covering the expedition and filming the team's efforts to verify the plausibility of earlier expeditions of this type having reached the Pole, and regarding the sheer perseverence of man and dog, against a hostile environment to succeed in reaching the North Pole without re-supply or air support.

We wish them good luck and Godspeed. ■

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QX-16

The Best of All Worlds

By Bill Howey

When I first saw the Epson QX-16 I didn't like it. Something to do with the color, or maybe it was a threat to the existence of my wonderful, full time working companion the QX-10. There was something almost snobbish about working with a self sufficient computer that did not need to recognize the existence of that monolith of a company called IBM.

There was that wonderful HASCI keyboard. While friends of mine were fighting the F1 F2 syndrome, I was happily using less esoteric keys such as INDEX, STOP, PRINT, MAIL. Who needed MS-DOS? I did, but I didn't know it until an account insisted my data be formatted for their computers. You guessed it, Lotus 123!

As luck would have it I was offered a QX-16 for testing. Now what fool would turn down an offer like that, especially when faced with the specter of shelling out big money for another computer he really didn't want in the first place? My faithful QX-10 was moved across the room, patted on the head with a promise that it would see glorious days either running a BBS or word processing for my fiance.

The manuals for the QX-16 and Valdocs were still being written at the time I took delivery. I was handed a computer, several floppy disks, a ten page xeroxed document that told me I would turn into a frog if I gave out Valdocs 2 to anyone and a reassuring, "You don't need the manuals Bill, it's all so simple."

They were absolutely right. Epson has perpetuated the grand tradition set by the QX-10; the next logical step is this machine which boasts TPM, CP/M and MS-DOS neatly wrapped in one friendly package. This is accomplished by co-resident microprocessors an 8088 running at 5.33 mHz for MS-DOS and the venerable Z80A clocked at 4mHz for CP/M and TPM-III.

Epson has carried on in the grand tradition set by the QX-10; the next logical step is this machine which boasts TPM, CP/M and MS-DOS neatly wrapped in one friendly package.

One look at the fourth generation HASCI (Human Applications Standard Computer Interface) keyboard and you know that something special has been brewed in the RSI/EPSON Caldron of Knowledge (see figure 1). The key tops are wide and invite the non-typist to use them. This was accomplished by shaving almost 1/4" off of the height of the keys and sculpturing them. Touch is specific with positive, although silent, feedback. Anyone who has done any extensive typing may initially find the feel and width a little disconcerting. Speed may suffer in the short run but this should be rewarded as soon as the lighter touch is recognized unconsciously, by a ten to fifteen percent increase in speed.

The keyboard is lighter by almost 2 pounds and gives the illusion of being considerably smaller than the original HASCI keyboard. The actual dimensional changes are less than a 1/4" in width and depth, and approximately a 1/2" inch reduction in its height. The keys remain in the exact same locations as their predecessors (with the exception of the short-lived Brother implementation of the HASCI-2 board). The EDIT key, which first appeared on the HASCI-2 board, is functional using VALDOCS 2. Its purpose is to call up the text editor from any location within Valdocs. This key could also be reprogrammed to call up WordStar or any other text editor from another program. PFK.COM, which comes with the CP/M 2.26B release for the QX-16, combined with the short utility, SYSTEM.PFK, available on the EpSource and EpsonConnection Bulletin Boards, is designed for this.

The superfluous LED indicators have been removed from the special function keys and the SHIFT LOCK key now sports two indicators which show if you are in the CAPS/ALPHA modes. The six function keypad remains the same with one exception: the dimple on the number five key has been changed to a ridge along the lower edge (see figure 2). I am not sure this was a wise decision. The dimple, used for locating the number five home key, has been a standard for years. Why try to change people now, just for the sake of change?

Several other significant but subtle changes have taken place with the finger interface. A 3/4" removable plastic strip covers the MS-DOS function key template. This template will no doubt come already pre-printed with the function key assignments for those programs Epson decides to support directly. Several blank templates come with the QX-16 so that the user can define his own set of special functions. Up until now all MS-DOS computers had to settle for ten special function keys which could be shifted to give a total of twenty. Epson decided to utilize the entire top row of keys, offering the user 17 keys (34 shifted) for customization.

> Very few computers manufactured today are as far along in final design as the Epson QX-16.

Before we leave the top portion of the keyboard, notice the ledge just above the template holder. This was specifically designed for the expert typist, (who rarely ever looks at the screen) to hold documents between the keyboard and screen for input. Epson took this directly from a write-up of the IBM keyboard.

The MS-DOS implementation of the HASCI keyboard will require a small amount of work by the new owner. The first shipment of keyboards does not have the arrow symbols and prompt words on the numeric keypad. It will be necessary to apply these with a pair of tweezers. Don't try to pry the key caps off. They could break. I know, it's happened to me in the past. When MS-DOS is booted the "DEC.TAB" key defaults to " NUM LOCK" (Number Lock). This locks out the numbers and reassigns the keys. It is now possible to control the cursor up, down, left, right, to the top of the screen or the end of the file you are working on.

The cursor control keys marked "Pg up" and "Pg Dn", "Home", and "End" work with word-processing and other programs to permit you to view previous or succeeding sections of a document. They are similar to the cursor control keys found next to the keypad but are specific to MS-DOS programs. If numerical input is required, pressing the "DEC.TAB/Num Lock" key will once again allow numerical input.

If you own a QX-10 and have just ventured forth into the exciting world of "GRAPH/SHIFT", you will notice that the key has now been renamed "ALT". Contrary to first impressions, no one stayed up all night just thinking of something new to call the key. This was done for a very specific reason called "MS-DOS". This is now a dual function key. Valdocs 2 uses this key to access 96 graphics symbols, and MS-DOS calls on the ALT key for most of its functions. If you are not familiar with MS-DOS and would like the opportunity to see how the function keys are used, PC Talk III, a communications program, will be available on EpSource (213-539-6765) or EpsonConnection RBBS (313-823-1425). I suggest that you download the DOC file. This 70-page, well written document is a fine dissertation on full uses of the ALT and other function keys. For comfort and convenience the keyboard variously adjusted on two folding legs to an angle of fifteen degrees.

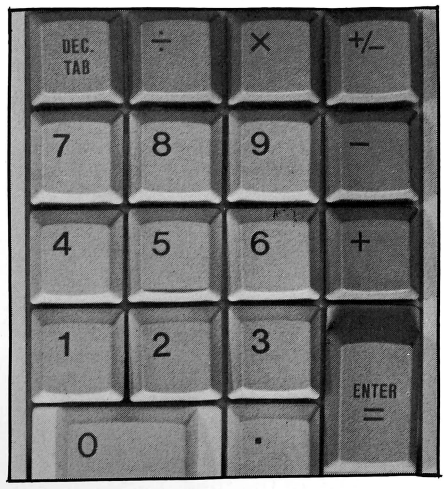


Figure 2 *Numeric keypad with a ridge on the number 5 key.*

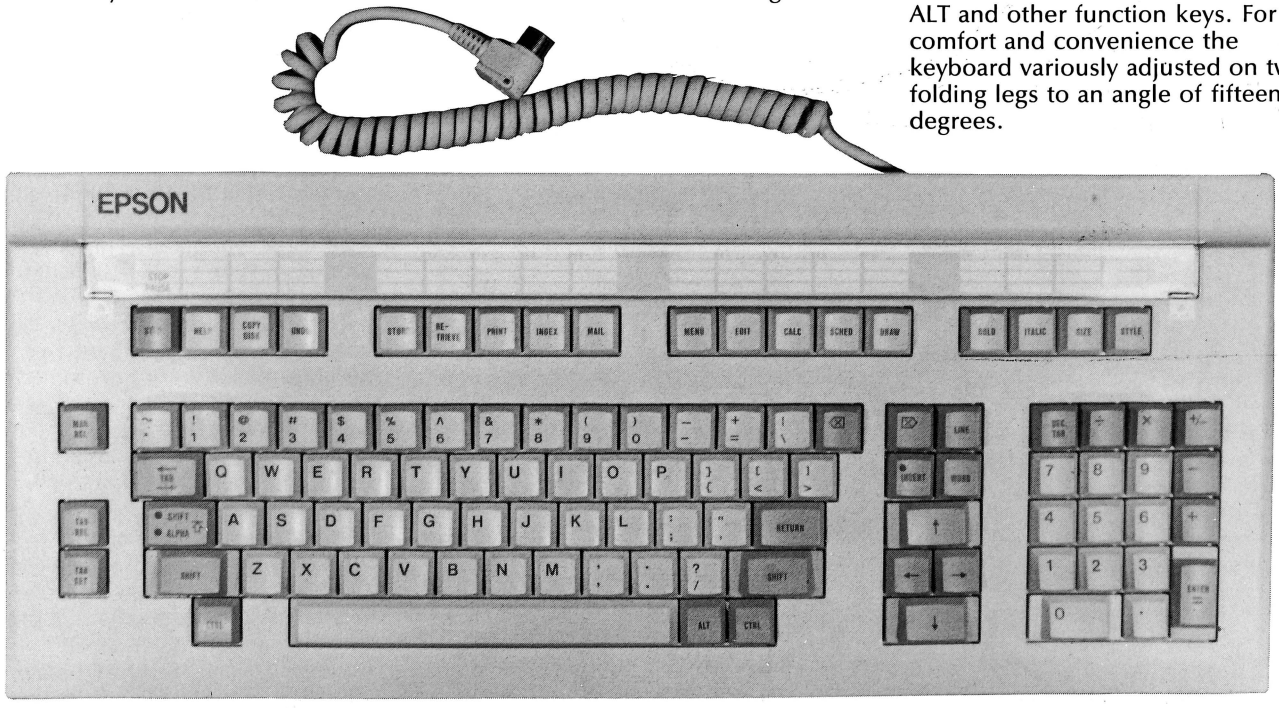


Figure 1 *The QX-16, fourth generation HASCI (Human Applications Standard Computer Interface) keyboard.*

The Hitachi monitor with power supplied by the QX-10 has been replaced. Some will find this an inconvenience because now there is something else to plug in. I feel that the features far outweigh the bother. Contrast and brightness controls allow full adjustment of the display. High intensity really stands out if the contrast level is adjusted on the back. The characters appear crisper and are definitely sharper in the corners. This is a tremendous improvement. Eye fatigue was a definite problem with the old monitor. It was sharp but this new one is actually crisp. I am not sure that all this sharpness and brightness is not counteracted by the grey mask of the tube. I would prefer to see this black. If ambient room light does become a bother because of reflection, it is possible to purchase a polarizing screen which fits neatly inside the modern bezel.

This is a hefty, well constructed monitor which retails for over $200.00 under other brand names (see figure 3). The chassis is solid and the components appear to be of excellent quality. The tube measures 11 1/2" diagonally, a hair larger than that found with the QX-10. Another feature which QX-10 owners will find inconvenient is the separate power switch located on the front of the QX-16 monitor. Computer Accessories make an excellent powerline conditioner and switch box which will fit neatly under the monitor if you find that you spend too much time throwing switches on and off.

A warning to QX-10 owners who have an extensive library of CP/M disks and are considering purchase of the QX-16. Don't use CP/M 2.0 or B 2.25 with this system. The Horizontal Hold just doesn't like it. Take the time to put new CP/M 2.26 system tracks on your prized possessions. If you insist on using an older version of CP/M and you must tweak the Horizontal Hold. DO NOT USE A SCREWDRIVER. Go to the nearest electronics parts store and purchase a plastic tuning device. I can guarantee that you will wipe out this control if you insist on using a screwdriver.

Color for "MS-DOS" requires a different monitor, such as the Comrex 6700. It is supplied with a hard wired cable for the IBM PC and requires a special adaptor to connect to the DIN plug on the back of the QX-16. This will be supplied by Epson but a part number has not yet been assigned. If you are allergic to green and just don't have any use for amber, color might be just the way to go. The white characters on a blue background are very easy on the eyes.

The QX-16 is about one half inch taller in height than the QX-10, to accommodate the two half height disk drives. Epson made an interesting decision when they decided to go to these drives. QX-10 drives which, so many Epson users love for their accuracy, silence, and reliability, support a formatted disk capacity of 376K or a theoretical 125 pages of documents on 40 tracks. The QX-16 uses quad density 80 track 96 TPI drives and supports 768K, approximately 254 pages of text on 80 tracks for MS-DOS and TPM III. In order to keep data compatible with other computers, MS-DOS also runs in 40 track mode with 360K of formatted storage space. 80 Track is not available for CP/M at the moment and the CP/M system cannot read an 80 track TPM III disk but TPM III can read the CP/M disk. This is not a serious problem for Epson to solve. It could become serious if their priorities take them elsewhere and CP/M takes a back seat to MS-DOS.

All this comes with some penalty. Quad density data is NOT compatible with the QX-10, further there is also some question regarding compatibility at the 376K density, which is also supported. The QX-16 will not have trouble reading diskettes formatted on the QX-10; however, some QX-10's will not be able to read QX-16 formatted diskettes. This is because the heads of the QX-16 write a thinner track to support the higher densities. Since this track is about half the width found on the QX-10, if the heads are just slightly out of alignment a data read error will occur. This is not unique to Epson, IBM also suffers from this same problem.

The new drives are considerably noisier than their predecessors. Two different technologies are represented here. The more sophisticated voice coil head positioning found in the QX-10 and the industry standard, "band positioning" found inside the QX-16 (Refer to the companion article, "Epson Disk Drives," for more detail). These drives should give excellent service for the life of the computer since dynamic track 00 head positioning is also used. Public Domain utilities such as SFILE.COM should not give this drive any problem.

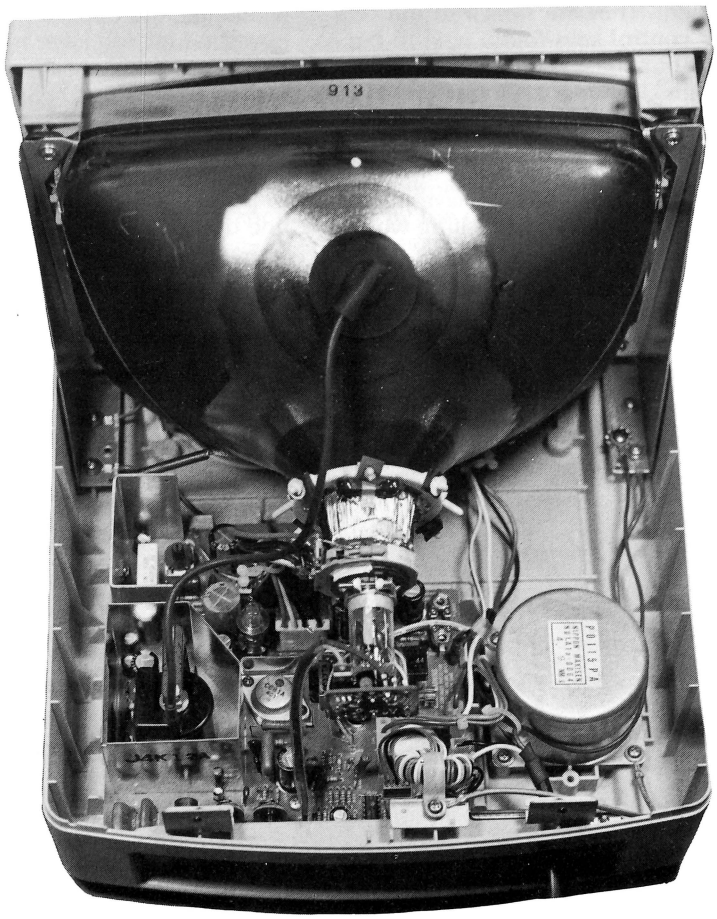
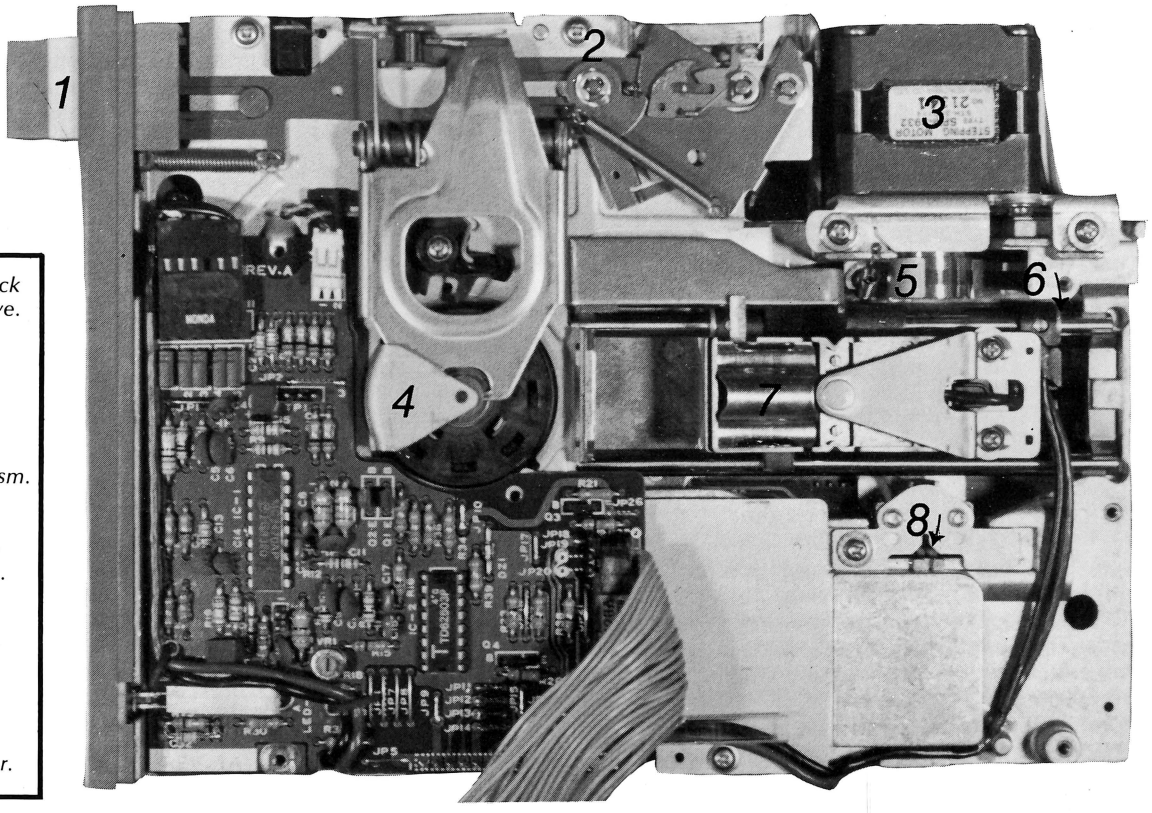


Figure 3 *Inside the QX-16 monitor.*

Continued on page 26



1 *PUSH button to lock the disk in the drive.*

2 *disk locking mechanism.*

3 *stepper motor.*

4 *clamping mechanism.*

5 *polished stainless steel band used to position the heads.*

6 *self-lubricating, bronze bushing.*

7 *top read and write head.*

8 *track 00 LED sensor.*

EPSON DISK DRIVES

The drives manufactured and used by Epson in their desktop computers represent a high degree of sophistication. The QX-10 and QX-16 drives are state of the art. They have the most complex "proven" locking mechanism in the industry. Other disk drive manufacturers have attempted to simplify the method of holding and ejecting the diskette with varying degrees of success. In time either the diskette fails to eject or it is bent slightly by the clamping mechanism which holds the diskette in place. This is not true of the Epson drives. The simple solution to a vexing problem was complexity.

The noise difference between the QX-10 and QX-16 disk drives is caused by the fact that they go about the business of reading and writing to a diskette in different ways. The most prominent noise comes from the stepper motor in the QX-16 which uses band positioning to locate the heads on the proper track. This is a polished stainless steel band, attached to the head in a saddle configuration which remains extremely accurate over a wide temperature range. It is actually more accurate than the ladder / voice coil design found on the QX-10 for stepping. The QX-16 drives step at a fast rate between tracks, (3 msec. QX-16, vs 15 msec. QX-10). The between-track-moving averages are 96 msec. QX-16 compared to 220 msec over 80 tracks per side on the QX-10.

The read/write head is a dual element, glass bonded ferrite/ceramic head with tunnel erase elements to provide erased areas (guard bands) between the data tracks. The head is mounted on a carriage assembly which rides on a permanently lubricated bronze bushing along stainless steel rails. Dynamic sensing of track 00 is accomplished by an LED/sensor which detects the movement of the head as it approaches track 00 and signals the stepping motor to brake. This is backed up with the usual physical stop found on the more conventional disk drives.

The spindle motor (turns the disk inside the diskette jacket) is of brushless transistor design. This is more accurate than the pulley belt design used on the QX-10 because there is no initial stretch to compensate for, when the motor starts up and the elimination of "stretch set" which can cause minor problems and inaccuracies as a drive matures. One advantage to the V belt is the cushioning effect it has on vibration which eventually is amplified and translated into noise. The direct drive motor found on the QX-16 is hard mounted (necessary) to the frame of the drive and causes the low growl heard when it is running. The QX-16 drives may be noisier than those found in its younger brother but they are considerably quieter than those found on any other computer today.

These drives will give long and accurate use as long as they are properly cared for. Proper care of any disk drive does not mean cleaning it once a week. It should be cleaned only if the media being used is of poor quality or read/write errors are being detected. Disc cleaner manufacturers want to make money so scare tactics are used to make you think that the heads are going to die if not cleaned frequently. This is not true. Frequent cleaning can wear down the glass bonded surface faster than just using the drive. ■

Figure 4 *Rear view of the QX-16. Note the absence of the light pen port and the re-designed, self powered monitor.*

The expansion slots have been reduced in number, to three on the QX-16. These slots are not IBM plug compatible but are intended for use with boards such as the Comfiler CR-103, as well as hard disk interface cards. The Semidisk 512K or 2Mbyte disk emulator does not function with the QX-16 yet. I have heard mumblings that there might be a separate compatible expansion box (not supplied by Epson) which would plug into one of the slots. This would mean that many of the special options cards built for IBM compatibles might work with Epson's latest pride and joy.

The back of the QX-16 is almost identical to its older brother (see figure 4). An RS-232C serial interface and a Centronics parallel printer port sit side by side. An 8 prong keyed DIN plug (output for the monitor) sits just to the left of the DIP switches. These DIP switches must be set properly for correct operation of the QX-16. The correct settings are listed in chart 1. Switch 1 must always be in the DOWN (on) Position to run Valdocs. The rest of the settings are for IBM monochrome, color and 40 column configurations.

A light pen is no longer supported. I have been told that Epson was unable to find a light pen which would exhibit the accuracy required by the system. Extensive testing was done on this several months ago so the information is probably correct. Inside, the QX-16 shows quality from front to back. The disk drives are housed in the upper half of the case along with the speaker. It was necessary to move the speaker from the mother board because of its size, which is about three times larger than the QX-10 speaker.

The lower half of the case houses the main electronics, including a dual 110/220 volt switching power supply, which is designed for the European market but modified by a jumper wire to run in this country. Epson recommends that the power supply be replaced by part number 4141203000 if the QX-16 is going to be used in Europe. Power supply boards are not always readily available. It is possible to convert the system over by desoldering both ends of J1. DO NOT CUT THIS WIRE. Remove it or replace the power supply. Do have a competent electronics technician make this change, for you may forfeit the warranty on your system.

The muffin fan has stirred some controversy — many QX-10 users have complained that this fan should be pushing air from the back rather than pulling it from the front. I think that Epson was wise with this design. Dynamics of air flow aside, ask any house keeper and you will find that dust, dirt and other assorted fun things never accumulate in front of anything; they always hide in back. Precision tools need regular cleaning. The QX-16 is no different.

The majority of the electronics are hidden from view by the video controller boards which are shielded (see figure 5). This shielding is necessary to keep the disk drives functioning consistently. Without it they would probably malfunction due to interference and noise from the rest of the circuits. Once the shielding is removed, we can view the 68B45 video controller chip which puts all those neat things you type on the screen in MS-DOS. CP/M and TPM are policed by a NEC uPD7220A chip and the 128K display memory for Valdocs TPM and CP/M. These are plug-in boards which sit above still another shield. When this piggy back arrangement is removed we are able to observe the mother board (see Figure 6). The Dual voltage (220/115 Volts) switching power supply smooths out the highs and lows (spikes and brownouts) so common today. Midpoint on the extreme right side of the mother board is the NiCad battery used for CMOS RAM and the system clock. This small power supply keeps all the vital statistics in memory for Valdocs and the clock/calendar when the QX-16 is turned off or unplugged. The expansion slots can be seen on the left side.

Most quality computers manufactured today will show the same high regard for careful layout of components exhibited here. Very few of them are as far along in final design as the Epson QX-16 we tested. There are many last minute engineering changes which can play havoc with a neatly laid out printed circuit board. An indication of this are the number of jumper wires which a company must hand solder into place until the final board design has been tested and approved. These jumper wires modify the circuitry either to improve the then existing design or to eliminate a bug. I counted a half dozen circuit jumpers in the QX-16. A very impressive statistic. It is not uncommon to see a hundred or more in a pre-released computer, and fifty or more during early production. This is one more reason why Epson computers just keep on running. Memory has doubled on the QX-16. The original specification called for

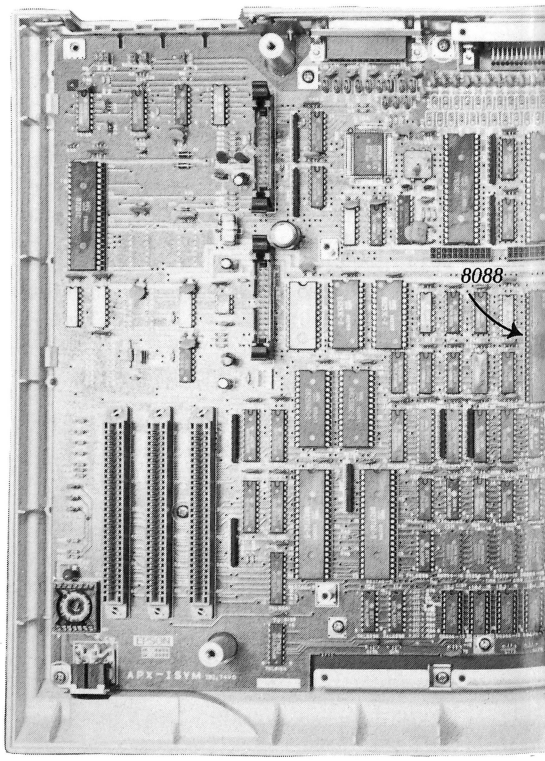
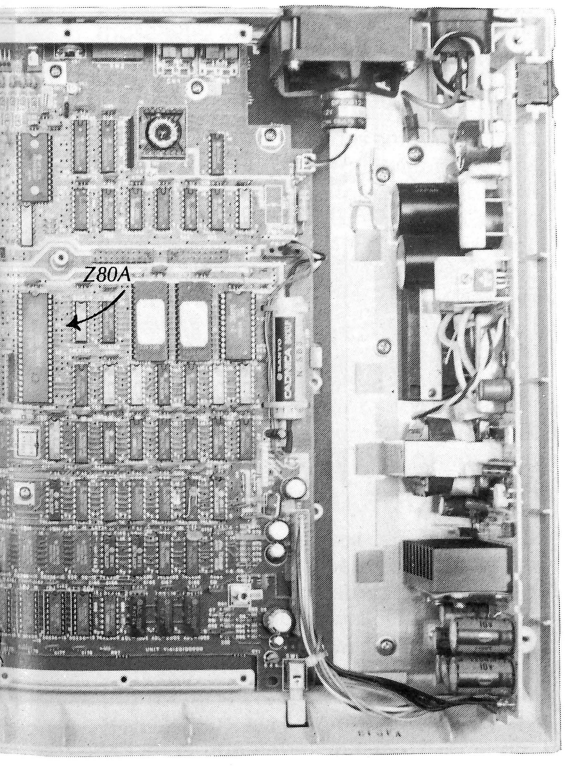


Figure 6 *The motherboard. The foundation of The power supply board is on the right right. Notice the Z80A 8-bit processor*

256K of RAM (Random Access Memory) expandable to 512K. Just prior to going into Alpha test, Epson announced that the full 512K would be offered. This means that the only issues left are compatibility, accessories and public acceptance.

Not all software is compatible with all the PC clones that are on the market. The same holds true for IBM. A program that will run on a PC probably will not run on the XT unless the software has been modified by the software house. There are programs that will run only with PC-DOS and then it depends on the version! Don't expect 100% compatibility with the QX-16.

Support for the QX-16 by Epson must be better than average if this computer is going to find a place in the market. Plug compatibility of hardware components could be a major issue. If an internal hard disk is going to be offered in the future, how difficult will it be to install? Will Epson give up the ghost on the ill-fated Comrex CR-103 modem and offer a 300/1200 plug-in card which will work without excuses? What about third party support and products such as the SemiDisk? What about compatibility within the four operating systems supported by the QX-16? (four?) We've said nothing yet about CP/M 86 and the concurrent multi-user possibilities which can be explored in this environment. At the time of this writing the operating system was not ready.



the QX-16 with three expansion slots on the left. side (vertically), and the "muffin fan" at the top (D780C-1), and the 8088 16-bit processor (MBL 8088-2).

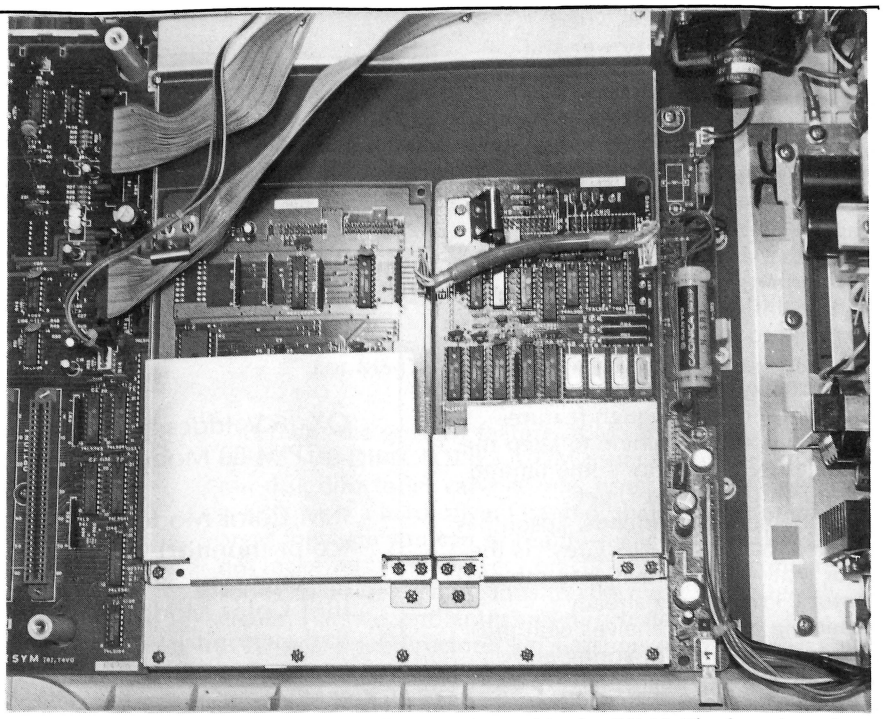


Figure 5 *The two shielded video controller boards used in the QX-16. The board on the left functions with MS-DOS, and the board on the right is used for Valdocs, TPM, and CP/M. These boards are mounted over the motherboard shown in figure 6.*

Another aspect of compatibility is the ease of transfer of files between the various operating systems in the QX-16 environment. I am happy to say that it is possible to move files from Valdocs 2 (TPM III) to WordStar (CP/M) and finally merge that file into PC-Write or WordStar 2000 under MS-DOS. This is reasonably easy with the help of Epson; their talented programmers have come up with several utility programs which will be a delight for the new user and welcomed by the seasoned pro. An Epson specific CP/M to MS-DOS utility, which is similar to the transfer program found in "UNIFORM" will be offered.

Another marvelous utility is XTREE. This program not only assures proper execution of file transfer in MS-DOS but also oversees the proper construction of subdirectories and trees. It is somewhat similar to INDEX.COM in CP/M. It helps solve the user interface problem which even a seasoned pro like Chris DeVoney (author "PC-DOS User's Guide", QUE Corporation Indianapolis $14.95) admits can be a problem. Other utilities normally found in MS-DOS are being modified to help the first time user.

This attention to detail takes the fatal flaw out of command execution and gives the Epson QX-16 a special personality. That personality will sell the press and the end user on the QX-16. As long as Epson continues to show aggressive support and remains available to the public at large, it is very possible that the final criterion, acceptance, can be met. The popular press has not been kind in the past, but a positive attitude adopted by this company could make it a major contender in the continuing saga of the "PC WARS".

Valdocs 2 in Beta version runs with flaws but is a definite improvement over 1.19. It may not be any faster than Framework or any other integrated package on the market but it is friendly and easy to use. Framework Version 1.0 will run under MS-DOS as long as the Scroll Lock key is modified using Fred. When Micro-Pro removed the copy protection from WordStar 2000 it also ran. The list is getting longer each day. Before you decide on a program such as Lotus or SuperCalc 3, sit down with it at your favorite software vendor to be sure it is what you want. MAKE SURE IT WILL DO WHAT YOU EXPECT! You may find that Valdocs 2 is all you need.

The skeptic might look at the QX-16 as an attempt at being all things to all people. This was not intended. Epson told the original QX-10 owners that they would be supported. That promise is being kept. This was a tall order in a world where IBM is the dominant player. Epson could easily have followed the drum beat of "Big Blue" but this is a machine that appears to have the best of both worlds. It has problems, but they are minor.

This is a machine that positions itself squarely in the small business

office and in the home where powerful computing power at a reasonable price is demanded. It does not replace the QX-10; it complements it. It is the next logical step in the continuing education of the end user, a comfortable friendly tool that can become familiar in stages without the demoralizing errors that are associated with its counterparts in the industry.

I like this machine. At first I was prepared to tear it apart. I KNEW it would not fulfill the promise of being comfortable and easy to use. I was wrong. There are enough features packed into this machine to keep the average user happy for some time to come. As for the color, get comfortable with it friends. Epson has decided that "Silver Fox Grey" is the color that will take them into the next century. Printers are already appearing on store shelves with the new fashion color for spring and summer and...! Really, Silver Fox isn't so bad, unless your wife has been hounding you for one! ■

Bill Howey is an independent contractor who is working with Epson America in the area of data communications. He has written for several computer magazines and works primarily with manufacturers.

QX-16 DIP SWITCH SETTINGS

	1	2	3	4	5	6	7	8	- switch
IBM Color Mode (80 X 25)		X	X	X	X	X		X	- up
(monochrome monitor)	X			default			X		- down
IBM Color Mode (40 X 25		X	X	X	X		X	X	- up
(monochrome monitor)	X					X			- down
IBM Monochrome Mode		X	X	X	X			X	- up
	X					X	X		- down
QX-16 Valdocs and		X	X	X	X	X	X	X	- up
CP'M 80 Mode	X								- down
IBM Color Mode (80 X 25)		X	X	X		X		X	- up
(color monitor)	X				X		X		- down
IBM Color Mode (40 X 25)		X	X	X			X	X	- up
(color monitor)	X				X	X			- down

Note: Switch 1 must be down (on) to run Valdocs
2, 3, 4, not used at present time
5, 6, 7, Specify the MS-DOS video mode
8 always up (off)

Chart 1 *QX-16 Dip Switch Settings*

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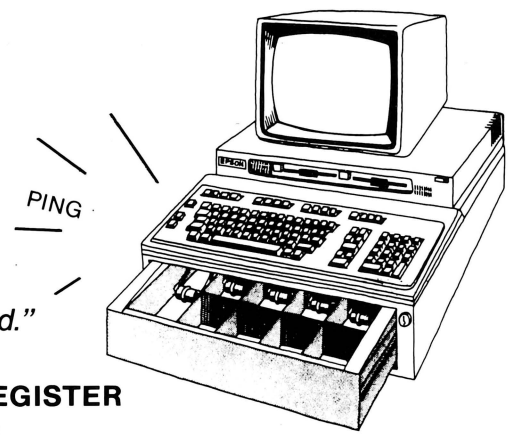

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ENTERING MS-DOS

By Allen Howell

This article is aimed not only at those of you who are new to MS-DOS but also at CP/M users who would like to know more about MS-DOS.

CP/M and MS-DOS are operating systems. Your computer couldn't operate the programs that it does if your system did not have an operating system to run them on. If you are not familiar with CP/M, we recommend that you read the article CP/M BEGIN from the March '85 issue.

MS-DOS stands for MicroSoft Disk Operating System. Microsoft is the name of the company that developed it.

The major difference between MS-DOS and CP/M is that CP/M was designed to operate on 8-bit microprocessors. MS-DOS was developed for the 16-bit processors, a newer generation of microcomputers.

In many ways, MS-DOS is very similar to CP/M. The internal functions of the two may be drastically different, but to the eyes of the typical user, many of the commands and principles are the same. MS-DOS contains resident (meaning 'built-in') commands such as REN (rename a file), TYPE (display a file), DIR (disk directory), DEL (delete a file, the same as CP/M's ERA command). MS-DOS also uses the same wildcard characters as CP/M, which consist of the '?' and '*'.

MS-DOS has several resident commands similar to those in CP/M. COPY is the equivalent to CP/M's PIP.COM program, which allows file transfers to and from disk drives and peripherals. MS-DOS also includes a built-in BATCH file facility. Those of you who are familiar with CP/M's SUBMIT.COM program can relate to this more easily than those who aren't. A batch file is simply a means of entering commands to your computer automatically from a disk file which contains the sequence of DOS commands which you wish to have executed.

MS-DOS also includes utilities such as EDLIN.COM, which is Microsoft's equivalent to CP/M's ED.COM; both programs are line editors, or mini word processors. DEBUG.COM, which is equal to CP/M's DDT.COM (Dynamic Debugging Tool), allows users to modify and debug .COM programs and other files.

These are a few of the similarities between the two operating systems. However, MS-DOS is different with filename conventions and includes commands which the standard CP/M system does not. One major difference is the command syntax for such functions as REN and COPY. Using CP/M, if you were to rename a file called JUNK.DOC to TRASH.DOC, the proper command syntax would be "REN TRASH.DOC=JUNK.DOC". If you were using MS-DOS, the proper syntax would be "REN JUNK.DOC TRASH.DOC", a sequence which to the typical CP/M user would seem reversed. Actually, both conventions are correct once you understand how each system interprets the commands. Notice how the CP/M syntax contains an equal sign between the filenames and the MS-DOS version does not. CP/M interprets such commands as equations, and the REN command structure is telling CP/M that the file called TRASH.DOC is now equal to JUNK.DOC. With MS-DOS, the command syntax is easily understood if you simply imagine that the word "to" is between the filenames (i.e., rename JUNK.DOC to TRASH.DOC). This difference in the filename conventions is probably one of the biggest "hangups" for users who go from CP/M to MS-DOS. So, just remember this format:

For CP/M	REN newname=oldname PIP newfile=existingfile
For MS-DOS	REN oldname=newname COPY presentfile=newfile

Perhaps the greatest feature of MS-DOS is the ability to create SUB-DIRECTORIES. CP/M users know how cluttered our disk directories can become, especially when operating a system on a hard drive. Granted, there are different USER areas in which you can store information, but CP/M does not make this function very practical. MS-DOS contains a series of resident commands to allow you, quite readily, to create, remove, and enter sub-directories.

What is a subdirectory? Let's assume you are operating your system on a hard drive for your business. You have an accounting package, a spreadsheet, a word processor and several other general programs. Your system has one floppy that is designated as drive "A", and a 10 megabyte hard drive that is assigned drive "C". You obviously intend to install all your software on the hard drive, but all the programs and their associated data files will surely clutter up your directory and make it difficult to find specific files, and to maintain an efficient file backup operation. It would be most convenient if you could store all of your accounting software in one area, and word processing program and letters in another area, etc. Well, you can. From the system "C>" prompt, type in "MKDIR filename". (MKDIR stands for MaKe DIRectory) where filename is the name you wish to assign to your new directory. If you wish to call this directory LETTERS, then you should have typed in "MKDIR LETTERS". MS-DOS will now create what appears to be typical file with an extension of <DIR>. In order to enter into your new directory type "CD filename" (CD stands for Change Directory). Now type in "DIR". You will notice that your environment looks much different from the one you were just in. Your directory now contains two files, one which contains one period and another which contains two periods. These files always appear in any directory you create and serve as reminders of how to get back to the directory you were previously in. Now you are ready to copy your word processing program and associated files into this new directory from your floppy drive. When you initialize your system and wish to use your word processor, just enter "CD LETTERS", and you'll be in the special directory area where only word processing files are kept.

GLOSSARY

RESIDENT COMMANDS — These are operating system commands that are built in to the operating system. They are always available even if the command is not displayed on a directory, or if you are logged onto a drive that does not contain any system tracks.

Submit — This is the name of a batch file utility for CP/M.

Batch — The process of entering operating system or program commands automatically. Such commands are entered and stored in a file in the order to be performed, and then can be executed automatically. CP/M's SUBMIT.COM is the program that "runs" the batch file. In MS-DOS, this ability to execute these files is built into the operating system.

Real-Time — an environment where clock time is incorporated or interfaced into the normal operations being processed.

Let's assume that you are a writer are you are writing several books at once. You wouldn't want chapters from one book getting mixed up with chapters from others, so it would be wise to create more directories within the one you just created. From the LETTERS directory, you might enter "MKDIR BOOK1" to create another directory to store the files that contain your first book, "MKDIR BOOK2" to contain the contents of your second book, and so on. Now enter "CD BOOK2" and then "DIR". Notice how the directory name keeps track of where you are, and how "deeply" into your own system you have gone. You are currently inside the BOOK2 directory, which is under the LETTERS directory, which is under the top directory, which is always simply a backslash mark. Also notice how LETTERS and BOOK2 are separated by a backslash. This is simply a directory name divider. You can create as many directories as you wish, and you may make them as deep as you want. You could just about make one run straight down into the center of the earth as far as your MS-DOS is concerned. I have never heard or read of any limits on the number of directories MS-DOS can handle.

How can you remove a directory? First, you cannot be in the directory you wish to remove. (There are tales of users who have tried this and mysteriously disappeared.) Enter the directory just above the directory you wish to remove and type in "RMDIR filename" (RMDIR stands for ReMove DIRectory). If any files or other directories exist within the one you are trying to remove, MS-DOS will display an error message, so be sure to "clean out" the directory first.

How can you run a program that is in a different directory? This is accomplished through the PATH command. If you are under "\LETTERS\BOOKS2" and wish to run a file in the directory "\UTILITY" (assuming you created this directory), simply enter "PATH \UTILITY" from the system prompt. This tells MS-DOS to search the UTILITY directory if the program you wish to run is not found in your current directory. More than one path name may be specified with the PATH command.

MS-DOS contains many more resident commands. Here is a brief listing of several more of them and what they do:

BREAK ON/OFF	- Allows you to deactivate MS-DOS's recognition of the CNTRL-C function key.
CLS	- Clears the screen.
DATE	- Display or change the system date.
TIME	- Display or change the system time.
PROMPT	- Allows you to change the system prompt.
SET	- Sets one string variable equivalent to another string for use in a later program.
VER	- Displays MS-DOS version number.
VERIFY ON/OFF	- Turns the verify switch on or off when writing to disk.
VOL	- Displays disk volume label, if one exists.

ECHO, FOR, GOTO, IF, PAUSE, and SHIFT are batch file commands and are explained in the MS-DOS users guide you receive with the QXPC board or with the QX Plus.

MS-DOS is more complex than CP/M; CP/M contains only 6 resident commands whereas MS-DOS contains 26, MS-DOS file structure and batch file facility's are clearly much more advanced and versatile; MS-DOS is also a "real-time" operating system, since it also records the date and time when files are created or updated.

With MS-DOS, your file organization problems are solved. With enough forethought, you can customize your system for you own needs, creating a very efficient structure. ■

MS-DOS Directory

```
A>dir

 Volume in drive A has no label
 Directory of  A:\

COMMAND  COM     15957  11-10-83  12:03p
CONFIG   SYS       128   9-04-84   1:39p
ANSI     SYS      1695   8-31-84  10:57p
COMFILE  SYS       695   6-15-84   8:23p
CHKDSK   COM      6468  10-19-83   7:51p
DEBUG    COM     12223  10-19-83   7:52p
DISKCOPY COM      1409  10-19-83   7:51p
EDLIN    COM      8080  10-19-83   7:51p
EXE2BIN  EXE      1649  10-19-83   7:51p
FC       EXE      2585  10-19-83   7:51p
FIND     EXE      6331  10-19-83   7:51p
FORMAT   COM      6368   2-10-84  12:00p
LINK     EXE     42330  10-19-83   7:51p
       20 File(s)    210944 bytes free
A>mkdir letters

A>dir

 Volume in drive A has no label
 Directory of  A:\

COMMAND  COM     15957  11-10-83  12:03p
CONFIG   SYS       128   9-04-84   1:39p
ANSI     SYS      1695   8-31-84  10:57p
123OPT   BAT       128   2-10-84  12:00p
123OPT   CMD       128   9-04-84   1:37p
LETTERS      <DIR>       3-19-85   1:40p
       21 File(s)    209920 bytes free

A>cd letters

A>dir

 Volume in drive A has no label
 Directory of  A:\letters

             <DIR>       3-19-85   1:40p
             <DIR>       3-19-85   1:40p
         2 File(s)    209920 bytes free

A>mkdir book1

A>mkdir book2

A>dir

 Volume in drive A has no label
 Directory of  A:\letters

             <DIR>       3-19-85   1:40p
             <DIR>       3-19-85   1:40p
BOOK1        <DIR>       3-19-85   1:41p
BOOK2        <DIR>       3-19-85   1:41p
         4 File(s)    207872 bytes free

A>cd book1

A>mkdir chapter1

A>dir

 Volume in drive A has no label
 Directory of  A:\letters\book1

             <DIR>       3-19-85   1:41p
             <DIR>       3-19-85   1:41p
CHAPTER1     <DIR>       3-19-85   1:45p
         3 File(s)    206848 bytes free

A>cd

A>dir

 Volume in drive A has no label
 Directory of  A:\

COMMAND  COM     15957  11-10-83  12:03p
CONFIG   SYS       128   9-04-84   1:39p
ANSI     SYS      1695   8-31-84  10:57p
123OPT   BAT       128   2-10-84  12:00p
123OPT   CMD       128   9-04-84   1:37p
LETTERS      <DIR>       3-19-85   1:40p
       21 File(s)    206848 bytes free
```

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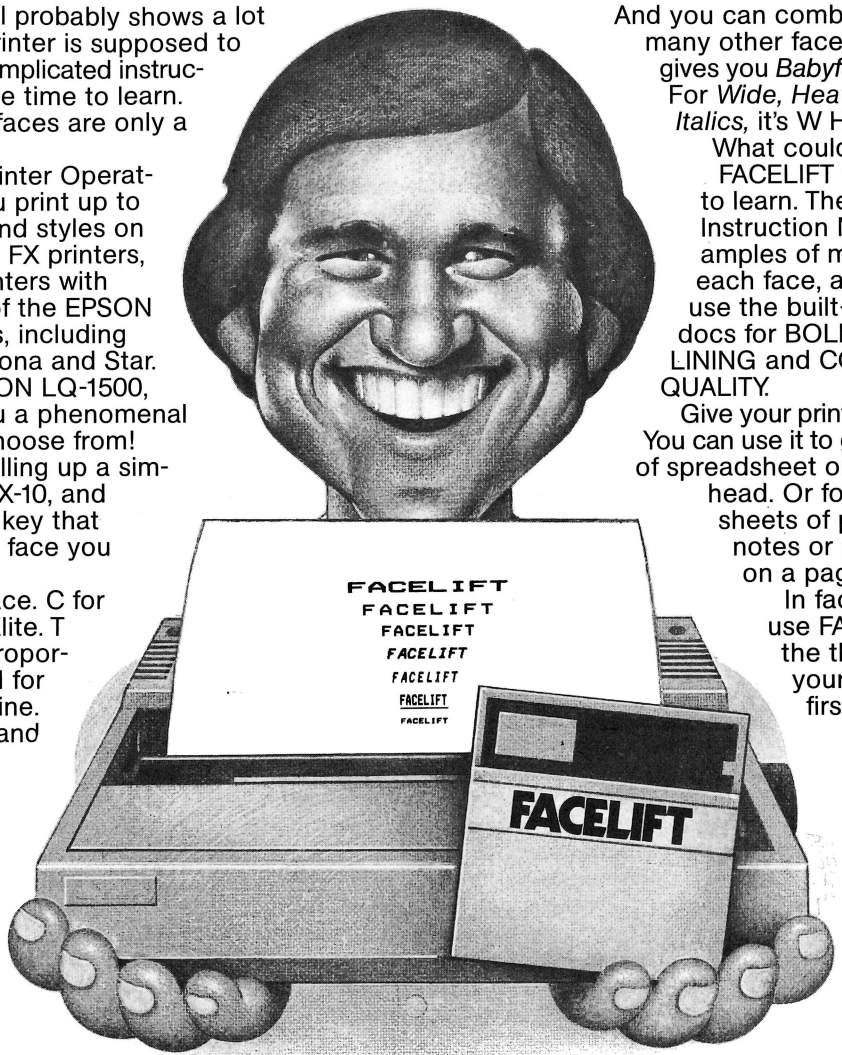

And you can combine the above to get many other faces. For example, B I U gives you *Babyface Italics, Underlined.* For *Wide, Heavy, Doublestrike Italics,* it's W H D I.

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MINI-LEDGER

by Larry Hufty

SPEC SPOT

Product: Mini-Ledger
Type: Expense Ledger Program
Computer: Epson QX-10
Operating System: CP/M 2.2, TP/M (also available in MS-DOS, PC-DOS, and CP/M-86)
Required Peripherals: Printer is recommended
Price: $129.99
Ease of Use: Extremely easy to use
Performance: Very Good
Documentation: Excellent
Summary: An outstanding single-entry, accounting product designed to track monthly expenses and income for personal and small business use.
Manufacturer:
Oakwood Publishing, Inc
335 West 134th Street
P.O. Box 3934
Gardena, CA 90247-7566

One of my original and primary purposes in buying my Epson was for organizing tax records and keeping track of where all of my money was going. My first attempt at this was to set up a fancy spreadsheet using PeachCalc. Unfortunately, this took hours to do, and was incomplete. I could easily input money spent, but it was time consuming moving around the spreadsheet. In addition, all I had was the amounts spent under each category, nothing to tell me where I spent it. So I was still left with boxes of receipts, cancelled checks, etc. What a nightmare.

It was then that I decided to look around for a simple, easy to use home accounting program. Naturally, I figured that since The Home Accountant was the most popular, it must also be the best. So that is what I bought. Then, after some time using and cursing at the slowness of The Home Accountant, I stumbled upon an article about Mini-Ledger. It claimed that, "Mini-Ledger will become the program all other small accounting programs are judged against" (see BUSINESS SOFTWARE, SEPT '84). How can you refute a claim like that? I was able to obtain a copy of Mini-Ledger and spent many hours comparing the two. I compared them in ten separate categories, rating each on a ten point scale, with a 1 being the worst, and a 10 being the best.

QUALITY OF THE MANUAL

It is almost as important that the manual be well written as the program itself. Of what use is a nicely prepared program if the manual is so hard to understand you can't use it. I found this to be the case with The Home Accountant(THA). Although the manual itself was readable, I had difficulty understanding many of its concepts. Possibly if had some accounting in college, it might have been easier. Further, at 166 pages, it is a little on the long side.

Mini-Ledger (ML), on the other hand, was concise and well written. In just a few pages, I was given a short tour of the entire program, and had a pretty good idea of how to get it going. With the built-in help screens throughout the program itself, any questions were readily answered.

Both manuals had a tutorial, but ML's was much easier to use. It was better written, shorter, and much easier to follow. For Manual Quality, I gave Mini-Ledger a 9 and The Home Accountant a 4.

EASE OF SETUP

I found the setup for The Home Accountant to be extremely lengthy, cumbersome, and certainly more time consuming than Mini-Ledger. Most of the time difference is relatable to the fact that The Home Accountant is written in basic, which, by its nature is slow.

For Ease of Setup, I gave Mini-Ledger an 8 and The Home Accountant a 4.

COMPATIBILITY

I looked at compatibility in two different ways. First, and probably the most frustrating for many, is the small number of printers that The Home Accountant is compatible with and able to support. With only 19 printers to choose from, you are somewhat limited. With Mini-Ledger, you have a list of 31 different printers to pick from. In addition, you can configure up to 9 more printers. I also found it to be somewhat easier to configure an unlisted printer with ML than with THA.

The other type of compatibility considered was in the program's ability to format its output for use with a wordprocessing program. In this respect, The Home Accountant was unable to provide any compatibility, while Mini-Ledger was able to. With Mini-Ledger, I was able to output any of the print functions to a disk, and then, using WordStar, place them in the middle of my text. For a small business, the ability to take a portion of your *Profit and Loss*, call it up with WordStar, and then add to it, could be very useful.

For Compatibility, I gave Mini-Ledger a 9, mostly for its ease in printer selection and I gave The Home Accountant a 3 for its lack of printer selection and difficulty in setting up a new printer configuration.

EASE OF USE

This is probably the most important of all ten categories. What good is a

program, no matter how comprehensive, if it is impossible to use. With Mini-Ledger's clear manual, I had a fairly good concept of how the program was laid out. I knew from the start that the first thing needed was a "Chart of Accounts." This is setup by assigning numbers to represent different categories of expenses and income. For example, 00-0100 would be the sub and main code for car expenses. Then you can narrow it down by using 01-0100 to represent Car #1, 02-0100 to represent car #2, etc. The first two digits define the subcode, whereas the 0100 defines the main code of car expenses. Should you forget which code to use, a simple question mark typed in the subcode or main code section will produce a quick list of your codes. And if you really get confused using numbers for codes, you can use letters. For example, DA-CAR could be your Datsun. If you are inputting data and all of a sudden need a new code, just type it in. Mini-Ledger will tell you it doesn't have that code in its file, and will ask if you would like to make it a permanent member of the file. It is as easy as that. With The Home Accountant, it is a different story. You can add categories, but not in the middle of data entry. And be sure to get a printout of the categories, since there is no way to see a list in the midst of data entry.

The Home Accountant, has more complexity than I need. Each checking account is separate, and each checking account must have a concurrent cash account and credit card account. It doesn't matter to me whether I paid for the shoes with a check, cash, or credit card. Just as long as I paid for them. One advantage The Home Accountant does have over Mini-Ledger is in tagging entries for tax purposes. With The Home Accountant, any purchase that is tax deductible can be tagged with a TAX (Y/N) field. Mini-Ledger doesn't have this feature.

Another feature of both programs is the "split transaction". This involves having one check, and needing to split its use. With The Home Accountant you must go through a series of steps to accomplish this; with Mini-ledger you just type the same check number as the previous entry.

One good feature of The Home Accountant that I miss with Mini-Ledger is the two-line allowance for each check entry: one for the payee and one for remarks. Mini-Ledger provides only 20 spaces for payee.

Both programs will balance your checkbook for you, but Mini-Ledger is far superior in this respect. Mini-Ledger can in seconds mark a check as having cleared the bank; with THA, you must go through each entire data field of each check in order to clear it. And, with Mini-Ledger, if a group of checks or even the whole month's worth has cleared, it is a three keystroke process to mark the entire group.

Overall, I found Mini-Ledger much easier to use, and assigned it a value of 10. The Home Accountant was not as easy to use and received a marking of 5 for ease of use.

SPEED

The Home Accountant is written in MBASIC and is inherently slow, in fact, I quit using The Home Accountant and went back to my spreadsheet. Mini-Ledger, on the other hand is extremely fast. For example, I entered the same ten checks and deposits into both programs. In The Home Accountant it took me 9 minutes and 13 seconds; with Mini-Ledger it only took 3 minutes and 24 seconds for the same ten transactions. To mark 20 checks and deposits as having been cleared took 10 minutes and 17 seconds with The Home Accountant; with Mini-Ledger, the same 20 transactions took 1 minute 28 seconds.

I have given Mini-Ledger a 10 for speed and The Home Accountant a 2.

DATA ENTRY

Although data entry can easily be tied to Speed, I felt that it should be separated. Both programs make data entry a fairly simple process, but once again Mini-Ledger is much easier to use. With The Home Accountant each transaction is done on a separate screen, and, as I mentioned, is extremely slow. With Mini-ledger, each transaction is on one line, with 10 lines showing at any one time. You can copy information from the line above with a simple carriage return. For example, if the date is the same, and the check number is one higher than the last and the type of transaction is the same, all of these can be input with just 3 carriage returns.

With The Home Accountant, it is more difficult to switch from check-writing transactions to making a deposit. Each function is a separate type of function, and must be called on. So to go from checks to deposits to checks again is cumbersome. With Mini-Ledger, the process is swift. Under the heading of T for "Type Transaction" you simply type a "P" for payment, a "D" for deposit, a "C" for credit, or a "V" for void; no need to wait for another module to be called up as with The Home Accountant.

For data entry I gave Mini-Ledger a 10 and The Home Accountant a 5.

CATEGORY	MINI-LEDGER	THE HOME ACCOUNTANT
Manual Quality	9	3
Ease of Setup	8	4
Compatibility	9	3
Ease of Use	10	5
Speed	10	2
Data Entry	10	5
Value of Printouts	10	6
Versatility	7	8
Specialty Programs	4	8
Overall	9	6
TOTALS	86	50

VALUE OF PRINTOUTS

Both programs give you an abundant number of printouts, but those produced by Mini-Ledger were generally easier to decipher. The one printout that The Home Accountant had that was far superior to Mini-Ledger was the check activity report because it showed both the payee and the memo of what the check was paid for. Obviously, Mini-Ledger is unable to do this.

The one item that The Home Accountant can't do is print its reports on the screen. All reports must be sent to a printer. I felt that

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this alone was a major drawback of The Home Accountant. With Mini-Ledger, you have the option of printing to the screen, a printer, or to disk. As was mentioned earlier, files stored on disk can be edited with Wordstar.

The one item Mini-Ledger can't do is print checks. At first, that seemed to be an important feature of The Home Accountant. But the more I thought about it, the less important it became. How often do you write enough checks to justify loading checks in the printer, aligning the paper etc?

For printouts, Mini-Ledger received a rating of 10 and The Home Accountant a 6.

VERSATILITY

This is a general, catch-all section. Both programs are quite versatile, and perform their functions as discussed in the manual. But for overall versatility, I am inclined to say that The Home Accountant is better. For example, though I personally do not need the check printing features, but it is available only with The Home Accountant. Also, The Home Accountant provides other options, such as the ability to set up a budget, which can then be represented graphically. This permits you to see how your output of money relates to what you think it should be. None of these features are available on Mini-Ledger.

I have rated Mini-Ledger a 7 and The Home Accountant an 8 in versatility.

SPECIALTY PROGRAMS

The Home Accountant provides you with several programs I have named Specialty Programs. These include a Profit and Loss report, and several Forecasting functions (eg. the value of a future investment); monthly amount required to reach a future goal at a pre-determined interest and inflation rate; and the ability to forecast future budgeting requirements based once again on a pre-determined inflation rate. Mini-Ledger, on the other hand, provides you with only the Profit and Loss report. These features are not critical items to most users. But for those that use them, they are part of The Home Accountant.

I rated Mini-ledger a 4 and The Home Accountant an 8.

OVERALL VALUE AND USEFULNESS

Both programs provide a valuable function and are extremely useful. Neither manual promised something it couldn't deliver. However, I feel that The Home Accountant tries too hard to live up to its claim of being one of the most comprehensive accounting programs available to individuals. How many individuals or small businesses need the ability to write checks, or forecast savings? Probably very few. Mini-Ledger will track the cash flow professionally and that is exactly what it is designed to do.

CONCLUSION

Mini-Ledger is a program that will certainly satisfy most personal accounting and small business accounting needs. Mini-Ledger also will support the preparation of expense accounts or other specialized accounting needs when the more sophisticated software is too expensive to be practical. Mini-Ledger's reports will more than satisfy the needs of most tax preparation activity. And with the dozens of help messages available throughout the program, it is an ideal program for home use. At less than $150, it is one of the most underpriced programs on the market today. ■

Larry Hufty is an Operations Manager with Merrill Lynch in Buffalo, New York. He uses his QX-10 primarily for writing and DBM.

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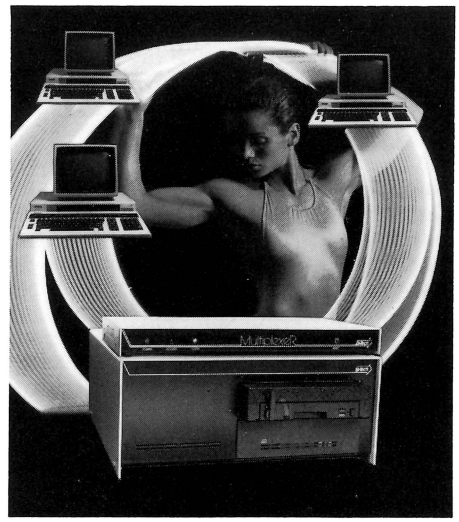

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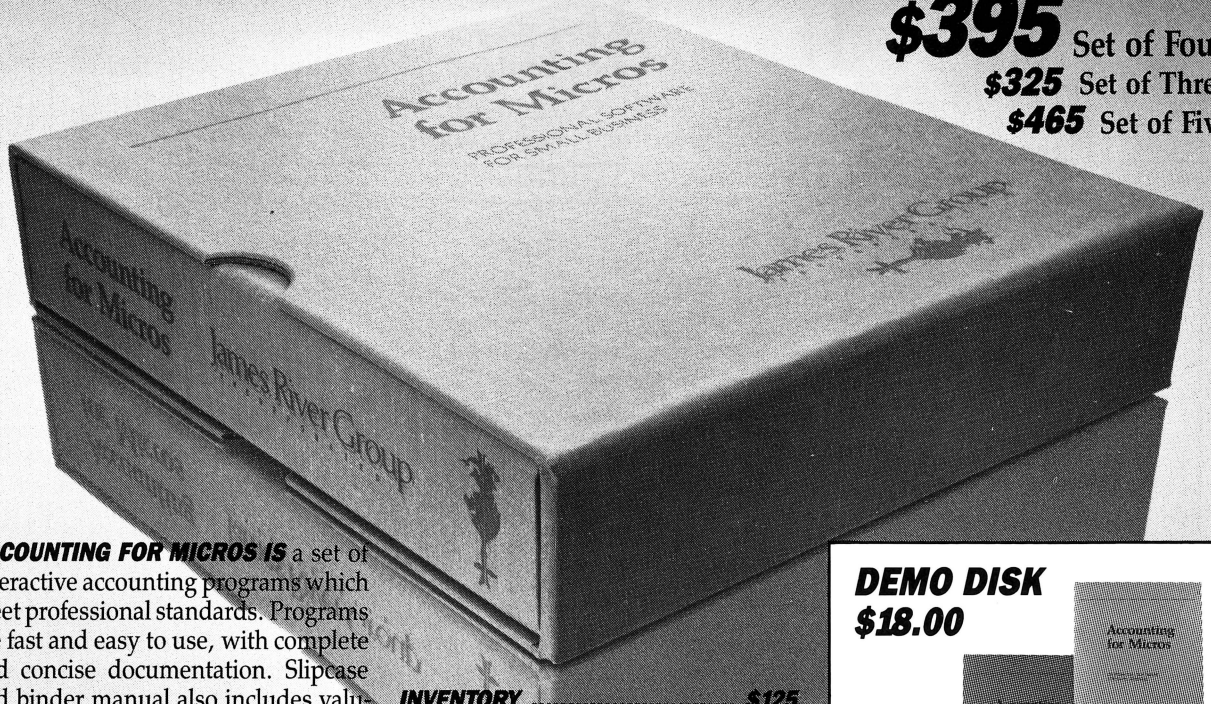

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SXPrinter

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by Bob Hermann

SPEC SPOT

Product: SXPrinter
Type: Portable dot matrix, NLQ printer
Price: $895 (for basic unit)
Ease of Use: Excellent
Performance: Excellent
Documentation: Very Good
Summary: With a draft mode of 300 cps, and a 50 cps NLQ mode whose output is better than that of the LQ-1500, this printer offers versatility and capability that is hard to beat.
Manufacturer:
Micro Peripherals, Inc.
4426 South Century Drive
Salt Lake City UT 84123

Externally, this printer looks exactly like the Sprinter (reviewed in the July 1984 EC, pg. 26). It has all the capabilities of its predecessor, plus several enhancements which lead me to characterize it as a 'portable LQ-1500'. The two most prominent external features are the front sheet loader and the SoftSwitch keypad. The front sheet loader accepts single sheet or fanfold paper, which makes it one of the easiest printers there is to load in either the friction or tractor mode. Paper may also be loaded onto the adjustable tractor feed mechanism through the rear (actually underneath) paperfeed path. Adjustable guides facilitate front loading of single sheet paper of any width up to the maximum allowed (9.5 inches).

The SoftSwitch keypad permits instant operator control of:

- Printer Status
- On/Off Line
- Top of Form Slew
- Reverse Top of Form Set
- Compatibility Modes
- SideWinder Mode **
- Repeat Document **
- Monitor Mode
- Slash Zero
- Character Wrap
- Buffer Reset
- Baud Rate *
- Print Quality
- Character Set
- Top of Form Set/Clear
- Vertical Tab Set/Clear
- Horizontal Tabs Set/Clear
- Characters per Inch (10,12,14,15,17)
- Left Margin Set/Clear
- Lines per Inch
- Auto Line Feed
- Perforation Skip

* Serial Models
** Requires 64K buffer

As you see, the 18 key SoftSwitch pad greatly simplifies the handling of different sized forms and output qualities. A handy reference card gives exact sequences necessary for all commands.

When referring to the printer as portable, we mean that the unit, with cover installed, can be carried like a briefcase (note: Weight is 15 pounds.) Inside there is room for all the necessary cables and about 250 sheets of paper. AC power is required for operation.

The printer has a listed draft speed of 300 characters per second. Using a simple BASIC program, the actual draft mode speed was determined to be about 185 characters per second.

To put this in perspective, the comparable speeds of the LQ-1500 are 200 cps listed and 140 cps determined. Five other printing speeds; including a near letter quality mode of 50 cps, are SoftSwitch selectable. The quality of the NLQ mode beats that of the LQ, in the opinion of this reviewer. The font selection is quite limited compared to Epson RX and FX series printers. Used with Valdocs, the only enhancements allowed are underlining and bold. If you wish to take the time, the documentation implicitly details the procedure for downloading your own font to the SX. A downloaded font may be stored in the printer, and called into action by the keypad.

The basic unit is equipped with a 4K buffer which is expandable to 64K ($195). In addition to the advantages of an expanded buffer, the 64K memory allows for partial compensation of the major deficiencies of the printer — the limited character font and the paper width limitation. StyleWriter ($39), an easy to use Fancy Font type of program, may be used with the expanded buffer. Unfortunately the program is only in MSDOS format, so its use requires the Titan board.

Since the printer will only accept paper 9.5 inches wide maximum (including sprocket brackets), the maximum allowable characters per line is limited to 132 in the condensed mode. The 64K buffer, enables you to use the SideWinder mode. This SoftSwitch selectable feature allows 90 degree rotation of printouts of files up to 64K in size, so that spreadsheets with up to 1365 columns could be printed.

Two options exist if you wish to use the SX with the Geneva PX-8. You could purchase the optional serial board for the printer ($110) or use an external serial to parallel converter. Since the parallel output of the printer is a DB-25 connecter, some type of male to female converter would be required to make the connection.

A major improvement over the Sprinter is the new, better organized documentation. A handy quick reference card makes using SoftSwitch commands easy. An index would complete the otherwise excellent documentation.

The speed and letter quality output of the SX place it ahead of the the LQ-1500 in these respects. With its portability, SoftSwitch Keypad and "Forms Handling" capabilities, the SXPrinter is a powerful and versatile machine. ■

SmartKey II

by John D. Yoder

SPEC SPOT

Product: SmartKey II
Type: Keyboard Customizing Utility
Computer: QX-10
Operating System: CP/M 2.25
Price: $49.95
Ease of Use: Good
Performance: Good
Documentation: Excellent
Summary: Allows the user to redefine any key to reproduce any other key or series of keys.
Manufacturer:
Software Research Technologies, Inc.
3757 Wilshire Blvd.
Suite 221
Los Angeles, CA 90010

SmartKey II is a utility that allows you to redefine a key to produce any other key, string of commands, or block of text. Such redefinitions permit you to customize your keyboard, and, by assigning repetitive keystrokes to a single key, they make data or text entry at the keyboard faster, easier, and more accurate.

SmartKey II loads into memory ahead of your word processing, database, or spreadsheet programs. Once loaded, it acts like an electronic switch, controlling the path of all keystrokes. Unless you redefine a key, that key functions as it normally would; striking an "A" on the keyboard, produces an "A" on the screen.

But, if you want a single key to produce a frequently used series of phrases like:

> Sincerely yours,
> Horace T. Jones
> Vice-President for Marketing
>
> cc: Randal P. Gunden

you hit the "set up" key (initially the margin release key on the QX-10) and type in the phrases, words, or commands that you want that key to produce. After you have created your definition, you hit the "set up key" twice to place it in memory. If you decide to keep the definition permanently, you can create a "definition file" on your data disk where it will be ready to load the next time you need it.

Other features of the utility include: 1) the ability to change the set up key from the margin release to any other key; 2) a supershift key that makes frequently used keys, like the character keys, available for redefinition; 3) and a compiler that permits you to write long definitions using a word processing program. All of these features are very easy to learn, in part because of the excellent documentation. I was able to make the program perform every function in less than an hour.

> Increased accuracy in entering data is one benefit of a utility like SmartKey II

The ability to redefine keys is not just electronic sleight-of-hand designed to impress gadget freaks. It permits standardization of keyboard commands, fewer keyboard commands, and makes data entry faster and more reliable.

The speed of entering stock phrases in letters, like the examples I used, is obvious; you could build up a library of titles or paragraphs that you can recall with one keystroke. This capability is irrelevant if you don't write many letters with stock phrases. Further, since SmartKey II doesn't work with Valdocs, its usefulness is somewhat limited.

SmartKey's speed in executing commands, or flipping through the menu of a spreadsheet, data base, or word processing program is to be appreciated. For example, if I am writing a program on taxes in BASIC and want to "save" the program frequently on the disk (as I should), I can redefine the HASCI "Store" key to execute the command, SAVE B: TAXES, eliminating twelve keystrokes every time I save that program. When I set margins for a MultiPlan file that I'm ready to print, I type a total of 12 keystrokes (P M 1 0 (TAB) 1 (TAB) 100 (TAB) 63 RETURN). Using SmartKey II, I can press one key and perform that sequence in a fraction of a second.

Increased accuracy in entering data is another benefit of a utility like SmartKey II. Since the redefined key always reproduces the same letters, it is perfect for repetitious entries in a text, data base or spreadsheet. This "cooky-cutter" feature has numerous applications. A friend of mine is writing a Spanish dictionary. Using SmartKey II, he assigns the root of a verb to one key and the regular endings to others. Then he can repeat the verb root as many times as needed, add the endings accurately, and know that once he has them spelled correctly, they will always be the same.

More important than greater speed and accuracy, however, is the ability of SmartKey II to integrate the conflicting commands in different software programs. Imagine that someone reversed the order of the home-keys on your keyboard. Even though you could see where the new letters were, your right index finger would continue to respond when you thought about typing the letter "J." Thousands of keystrokes have conditioned it to respond to "J." That has always been it's business.

This hypothetical switching of keys is a reality when I switch between Valdocs and other CP/M programs. Valdocs deletes words one way, a spreadsheet in another way. Switching back and forth between them is confusing to me. My fingers resist learning five different ways to delete a word. SmartKey II harmonized the different commands. It organizes the keyboard in a consistent way, no matter what program you are using. For example, since I use Valdocs for word processing, my fingers are in the habit of hitting "retrieve" to load a file into memory.

When I switch to the command structure of Multiplan, even the simple sequence of keystrokes

ed to retrieve a file ("T L B" then it the cursor control keys to see the index), is like asking me to speak French; it's possible, but very awkward. My solution has been to redefine the QX-10's "retrieve" key to perform that command sequence, thereby adding a small degree of uniformity to the cluttered world of software commands with which I must contend. That redefinition may seem like an insignificant achievement but it reduces the number of command sequences I have to remember by one. Multiply that be the hundreds of commands in a large program and the savings become significant.

The Epson QX-10 keyboard, with function keys that already have names, is an ideal match for SmartKey II

As this example suggests, the Epson QX-10 keyboard, with function keys that already have names, is an ideal match for SmartKey II. The names help me remember what functions I have assigned to different keys.

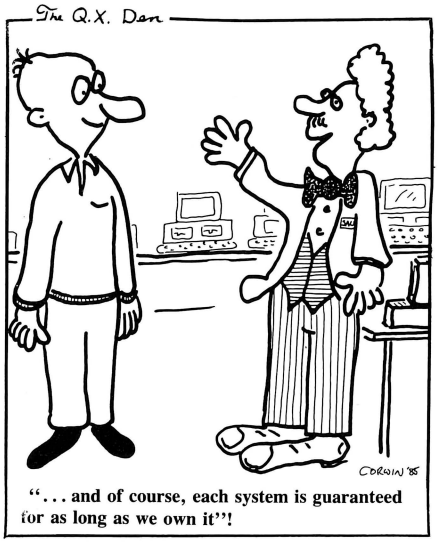
SmartKey II has two weaknesses that deserve mention. If you make a mistake when you are entering your definition, you can't back up and erase the mistake. You must start the definition over. That's very frustrating with long definitions. The compiler that allows you to write long definitions with a word processing program overcomes that limitation to a degree, but it is time-consuming to use on all but the lengthiest definitions.

A second weakness is that it does not execute the commands for a menu driven program as you enter them. Consequently, you must write the command sequence down on paper, enter it, and then execute it in order to see if you have written it correctly. Frequently, I miss a nuance in the menu while I'm stepping through the program to write down the proper sequence of commands.

Finally, although SmartKey II works with any CP/M program, it will not work with Valdocs. However, Valdocs 2 may have a version of key-customizing, if I correctly understand the computerese in the Valdocs 2 brochure. Number 64 under "Editor Features" reads: "10 User definable functions for 2-key multiple operations or text entry." By the time you read this, we may all know what that means.

SmartKey II is a utility I recommend to anyone who uses even one CP/M program in addition to Valdocs. Its ability to regulate keyboard commands means your fingers need to learn only one keyboard syntax. The result is less frustration and greater speed and accuracy in entering data. ■

John D. Yoder, Ph.D., is the Director of Continuing Education at Goshen College in Indiana. He has an Epson QX-10 in his home and uses an IBM PC and DEC-matic at work. He supervises the computer classes offered at the college.



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by Bob Hermann

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XtraKey

A Comprehensive Program to Customize your Keyboard

by Bob Hermann

SPEC SPOT

Product: XtraKey
Type: Keyboard Customizing Utility
Operating System: CP/M 2.2
Price: $39.95
Ease of Use: Fair
Documentation: Complicated
Summary: Has more 'bells and whistles' and greater capacity than SmartKey, but is also more difficult to use.
Manufacturer:
Xpert Software
8865 Polland Avenue
San Diego CA 92123

XtraKey and SmartKey II Plus are both utilities that allow you to customize your keyboard and make data entry faster, simpler and more accurate. Both programs load into the memory of the QX where they stay until exited or the system is reset.

This customization of your keyboard can greatly simplify the process of running other programs, such as WordStar, PeachCalc or dBase II. All definitions created will be lost when the system is reset or when SmartKey is exited, unless you use the accompanying program FIXKEY to save them to a file which can be recalled and edited.

If you have redefined so many keys that you run out of keys to redefine, you can use Xtrakey's Xshift feature or SmartKey's SuperShift character to establish another entire set of definitions. The default limit on SmartKey data files is 0.5 K. This is equivalent to 254 characters, meaning that all the definitions in a data file may not exceed 254 characters. A program called SKPATCH allows user configuration of this limit to a maximum of 7.5 K. This signifies that you can easily reproduce letters, reports even entire paragraphs at the touch of a single key. Xtrakey has more features than SmartKey in this area. You may create up to seven Xshift keys, so that you could have seven different sets of keystroke definitions for every key on the keyboard. The available TPA (transient program area) is the only limit to the total number of characters that can be assigned at any one time.

SmartKey will not allow you to backup and correct any errors made while entering definitions. This can be a problem when typing in long expressions; if you make a mistake you'll have to start all over. They have provided a way around this, however. You may use a word processor to create the keystrokes required for a certain application and then use an option of FIXKEY to compile this into part of a SmartKey data file.

With Xtrakey you can also create definitions while running another program, or 'while-on-the-fly'. You may elect to use Xedit, a 'keystring word processor' to make them or use an actual word processor and an XtraKey utility feature similar to SKPATCH. To redefine keys while in the middle of something else, hit the Xshift key (the equivalent of the SmartKey SuperShift key) and then the "!". Then enter the key to hold the definition followed by the definition itself. Like SmartKey it is necessary to use a utility to save any created keystrings to a data file. Unlike SmartKey, you have the ability to correct mistakes in definition entries.

Xtrakey has several other features not found in the Smartkey program. Keystrings may be sent directly to the printer or screen, bypassing any program being run. This permits the creation of your own custom help screen for complex programs.It also has a screen dump feature that gives instant hard copy of your current screen display. And there are several ready-to-use definition files for popular programs like dBase II, WordStar, Perfect Writer, Perfect Calc, and MBASIC (SmartKey has one for dBase II only) included with the program.

The impressive part of both of these programs is that they make data entry faster and more accurate and give you the power to regularize keyboard commands. You could build a library of titles or paragraphs recallable with a single keystroke. Let's say you are writing a BASIC program and frequently want to SAVE it to disk. Redefine the STORE key to SAVE B: "FILENAME", and you've eliminated over a dozen keystrokes.

These programs also speed up the use of programs which are menu driven. For instance when setting margins for a MultiPlan file that is ready to print, you would enter: (P M 1 0 (TAB) 1 TAB 100 TAB 63 RETURN); with SmartKey or XtraKey you can use one keystroke to perform the same sequence. The HASClized keyboard, with function keys already defined, is ideal for a keyboard redefinition program.

SmartKey and XtraKey are compatible with most CP/M programs. Neither will function with Valdocs or on the PX-8. SmartKey is considerably easier to learn than XtraKey. It has fewer features to comprehend. The documentation is straight forward and quite simple to follow. You can learn to use all of its capabilities in less than an hour, while the Xtrakey manual warns you to read the documentation in its entirety at least twice before attempting to operate the program. This is probably a good idea for any software, but how many people are willing to do this? Most users, except true hackers, will never need the additional features of Xtrakey. Who could remember seven sets of definitions for every key on the keyboard anyway? You certainly won't go wrong with Xtrakey, but at nearly the same price, and with superior ease of use and documentation, SmartKey would be my choice. ■

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#6
Tape of the Month

This Month's Tape Contains the Following Files:

WSLOAD.COM	- Used with CONFIG.BAS, this is a Portable WordStar printer patch program permitting user configuration for the particular printer employed.
CONFIG.BAS	- See above.
WSDIR.COM	- Another WordStar patch program allowing you to view drive directory while in Portable WordStar.
WCOUNT.COM	- This handy utility gives the total number of lines and words in an ASCII file.

PLEASE remember that TOMs and DOMs should be treated like any software you obtain - the FIRST thing you should do when you receive a TOM is to make a backup copy. Granted, if your only storage medium is cassette's, making a backup can be somewhat difficult. The inconvenience and time necessary to accomplish this is minor compared to that of obtaining a new copy of the tape.

ORDERING INFORMATION: To order TOM6, please indicate the tape number on your check for $10.00 and send to: The EpsonConnection, Tape Service Department, P.O. Box 14027, Detroit MI 48214.

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Rx for PX

by Bob Hermann

The Upgraded PX-8 Operating System

The new PX-8 operating system ROM offers several enhancements over the original system. Altogether there are 16 differences between the new and the old system. You can determine whether or not you have the new ROM by looking at the top line of the menu screen. If the screen says "... CP/M ver 2.2 B PAGE...", you have the new one. The following are the changes in the new operating system.

1) Access to drive I is now possible. This drive may hold 8,16,32,64 or 128K CMOS ROM'S or CMOS EPROMs. Do not use NMOS ROMs/EPROMS (i.e. the GENEVA CONNECTION) in drive I. The power to drive I is always on (as opposed to drives B and C, were it is on only when the drives are accessed). WordStar and PortaCalc will not always work in the Multi Function Unit because of the copy protection method used.

2) The microcassette operating system has been modified with a safety feature for the DITINIT, REMOVE, and ERASE functions. When using one of these functions you are asked if you are sure that you want to continue, there by eliminating accidental invocation of an unwanted function (i.e. erasing a directory.)

3) When the battery becomes discharged, now there is not only a message to this effect on the screen, but also the CAPS, NUM, and INS lights on the PX (just to the right of the function keys) flash on and off.

4) If the message, "RAM DISK FORMAT (Y/N) ?" appears, a carriage return is now required in order to answer "Y" or "N".

5) An additional BIOS jump table is added, so end users can use it as a hook to modify BIOS functions. This table starts at $FD90:

$FD90	**JP**	**BOOT**
$FD93	**JP**	**WBOOT**
$FD96	**JP**	**CONST**

6) When the PX is turned off in the continue mode, the OS (operating system) will now send the command, "FORCE WRITE" to the external disk drives. Thus the buffer inside the drives will be written to disks when a floppy drive is attached.

7) The MENU is displayed even if there are no files on it.

8) The letter "B" appears after the version number on the top line of the MENU screen.

9) The default drives displayed on the MENU are "I C B A".

10) The Denmark I character set is now used in place of the Denmark II set. This was changed so that the PX-8 Denmark character set would match the standard MX, RX and FX printer Denmark character set.

11) In MENU of the old version, USER Area 0 files were always displayed, even if you were logged into another area. The new OS corrects this problem and has MENU display the current USER Area.

12) The beep from a CTRL-G was shortened from 1 second to 200ms (1/5 of a second).

13) Some of the system RAM ($EC00-$FFFF) parameters had to be moved around.

14) There were several ESC code sequences for the LCD that were ignored by the old OS. Nothing would be printed on the LCD. Examples are: Highlight Mode, Inverse Mode, and Flashing Mode. These are not supported by either OS, but now you will see garbage on the screen if such sequences are used with this new OS.

15) The initialization process of asking for date, time, RAM Disk Size, etc., was removed from the new OS.

16) A screen dump of the alarm/wake and system screen is prohibited. If you tried to do such a thing on the old OS, and you didn't have a printer connected, a power off/continue would cause the wrong screen to be displayed on powerup.

Modifying Line Spacing in Portable WordStar

Portable WordStar may change the line spacing characteristics on various Epson printers. When a document is printed on an RX-80 or FX-80, the line spacing is six lines per inch. On the P-80 or the LQ-1500, the spacing is approximately five lines per inch. This will throw off page formatting.

The LQ-1500 and P-80 printer mechanisms are designed for vertical paper movements in increments of 1/60" and 1/180". This is quite different from the RX and FX series printers which do vertical paper movements in increments of 1/72" and 1/216". The code sequence that WordStar sends to the printer (in hexadecimal) is 1B 41 06. The different line spacing, combined with the double line feeds that WordStar sends, causes the lines to be spaced 1/5" apart.

So if you use Portable WordStar with the LQ-1500 or the P-80, you need to use the dot command ".PL55" to format the page properly. This produces about 44 lines of text per page.

New Program allows Display of Disk Directory while in WS

A new little "patch" program allows you to see the directory of the disk while in Portable WordStar. This fulfills one of the major shortcomings of the program on the PX. We will feature this 2K program on a future Tape of the Month. ■

SmartKey $$ Slashed

Now everyone can afford to supercharge their computing with **SmartKey II Plus**, the software program that Peter McWilliams and a cast of thousands rave about. *SmartKey II Plus* speeds up and improves accuracy in computing by letting you reduce multiple keystrokes to the touch of a single key. In a new national ad campaign Software Research Technologies, originators of SmartKey II, have slashed the retail price of this immensely popular program. In response, Central's new low, low price is:

NEW!

SmartKey II Plus Super Combo Pak $49

—includes SmartPrint II Plus and Screen Smarts

You can use this powerful program to assign thousands of keystrokes to one or more keys on your keyboard. Once you have redefined keys, you can put them to work or change them at will. All without interfering with the regular function of your typewriter-like keyboard. You can also store your "smartkey" definitions in a special file and use them later, or make numerous definition files to use with a variety of your favorite programs or projects. Imagine saving complex command codes, boilerplate paragraphs, inventory numbers, or whatever, and then injecting any of them into your work with the stroke of a single key. It's true, SmartKey makes computing exciting again.

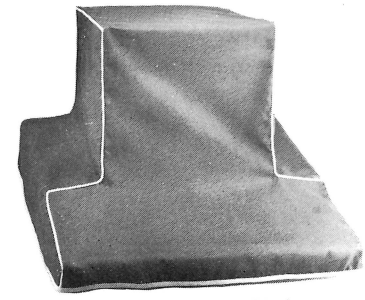
Central's specially priced **$49** combo pak includes SmartPrint II, a program that greatly enhances the operation of dot matrix printers. In addition, Central's combo pak includes, as an exclusive bonus, a free copy of Paul Golding's $15.95 book, *Screen Smarts, The Computer Tamer's Guide*. This book shows how Mr. Golding, a professional writer, uses SmartKey II to turn his humble computer into a supercharged dedicated word processor. Please don't delay, this offer may not be repeated. Order today to get this hard hitting $115 combo pak for $49.

Warning: There's nothing like SmartKey. It makes similar programs look dumb. Comes with a complete step by step manual. Easy-to-use. Saves time and money too.

Introducing A Classic Form Fitting Epson Cover

At last, the classic Epson dust cover you'll be proud to own and use. This first rate computer cover is made from a premium, lint free, static free, washable, free breathing, and fade resistant sailcloth. It comes in a rich looking Navy blue or Sand. The Navy cover has a smart contrasting silver gray piping and trim that adds a superior finished look. Not to be outdone, the Sand cover is handsomely finished in a rich chocolate piping and trim.

Photo: Form-fitting cover over CPU, monitor, and keyboard.



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Font is an easy-to-use software pa
compatible systems; no special hardv

Actual sample produced by an MX-80 and Fancy Font.

Incredible Printing Machine

Your Epson printer is going to get even better. *Fancy Font* can make it into an incredible printing machine. The *Fancy Font System* is a software program that turns the bits and bytes generated by your computer into over 30 font sets in sizes from 8 to 40 points that can be printed on any Epson MX80 with Graftrax, Epson FX or RX printer, or Gemini 10X printer.

Fancy Font styles include Roman, Bold, Italic, Script, Old English, and more. In addition, custom forms, invoices, labels, signs, foreign languages, mathematical notations, view graphs, resumes, newsletters, brochures, complete manuals, invitations, place cards, and high-resolution, proportionally spaced, letter quality business and personal letters can all be printed on your Epson printer with *Fancy Font* at the helm. *Fancy Font* is a product of SoftCraft Inc. You may have seen SoftCraft's national ads. They are printed with *Fancy Font* on an Epson printer. The ad is powerful visual medicine. The list price for the fully documented *Fancy Font System 2.0* is $180. Central's price is only $149. Order *Fancy Font* today and add an amazing sparkle of creativity to all your printed materials. Please indicate name and model of your printer when ordering. *Fancy Font* will make your Epson printer and Valdocs or CP/M word processor come alive. It's magical.

$399 IBM Computer

Turn your Epson into an IBM-type computer for only $399. Titan Technologies' new QX-PC2 is a popular snap-in card that fits into an easy-to-reach slot in your Epson QX-10. The QX-PC2 helps you make your Epson into a rip roaring IBM-type computer within minutes.

"...the QX-PC2 is an inexpensive alternative to trading your QX-10 in on a 'newer' technology. It is a tool that once mastered will expand the QX-10 to a new level of computing. I would be lost without it."
— Jim Markevitch
— *Epson Connection*

QX-PC2 OPTIONS GUIDE

Description	List	Price
192K QXPC2	$ 595.00	$399.00
256K QXPC2	$ 670.00	$499.00
384K QXPC2	$ 895.00	$650.00
512K QXPC2	$1045.00	$799.00
128K Aux	$ 249.00	$199.00
256K Aux	$ 399.00	$329.00
Ram Software	$ 39.00	$ 36.00

192K	Standard MSDOS co-processor card.
256K	Standard card with more memory.
384K	Standard card and attached memory.
512K	Standard card. Maximum expansion.
128K Aux	128K Auxiliary card adds memory.
256K Aux	Auxiliary card adds memory.
Ram Soft	Ram disk software for card.

— All units fully supported by Titan.
— Complete 12 month factory warranty.

Titan

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The QX-PC2 co-processor board is an expertly conceived component that contains the guts of an IBM computer. It includes a powerful 16-bit 8088 CPU. Comes standard with a full 192K of Ram, its own built-in memory, and is fully expandable to 512K Ram. Yes, your Epson is now clearly an excellent place to experience 16-bit processing without sacrificing your original investment in an innovative 8-bit computer.

- Simple snap in installation
- Fast 5 MHz processor
- Runs MS-Dos and PC-Dos software
- Support for hard disk
- MS-DOS 2.11 operating system
- Parallel and serial port support

The QX-PC2 lets you operate software that other IBM-emulators can't. The QX-PC2 board lets you use virtually all the software written for the IBM PC including the tough stuff like Lotus 1-2-3, Symphony, dBase III, and Framework. Thousands of dedicated Epson users and corporations have found the QX-PC2 turns an Epson into a whole new exciting computer able to use thousands of IBM-type software programs. You will too.

Don't spend thousands of dollars on an IBM-type computer in a fast changing market when you can get one on a card, plug it into your Epson, and get identical results. It's easy to operate a world of 16-bit IBM-type software on your Epson with the QX-PC2 co-processor. In addition, with the QX-PC2 board in your Epson, you can still operate CP/M and TP/M software. You can't do that on a straight IBM machine. The retail price of Titan's new QX-PC2 card with standard 192K Ram, operating manual, and MS-DOS system disk is $595. Central Computer is proud to add Titan Technologies' products to our line. For a limited time only, Central's low introductory price to the standard QX-PC2 card is $399. Please see the *QX-PC2 Options Guide* above for information on optional features. Order today to begin experiencing IBM-type power on your Epson soon. Central promises to beat any advertised price on this unit. It's time to upgrade that computer. Order today to get the QX-PC2 board fast. In stock, ready for immediate delivery. This offer may not be repeated. Order today.

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QX-10 Software

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MBasic	**Training software.**	$ 39.95	$ 33.00
Multiplan	**Speeds learning.**	$ 75.00	$ 54.00
SuperCalc	**Gives fast results.**	$ 75.00	$ 54.00
Wordstar		$ 75.00	$ 54.00
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Turbo Toolbox		$ 49.95	$ 47.00
Turbo Gift Pak with Turbo Tutor		$ 99.95	$ 92.00
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QX-10 User's Guide, Hansen		$ 17.95	$ 15.95
Screen Smarts, Computer Tamer		$ 15.95	$ 12.95

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Quick Check tells you exactly where your hard-earned money goes. *Quick Check* lets you set up your own expense and income codes, or use built-in codes, so you can start entering checks and deposits immediately. You don't have to know about accounting to use *Quick Check*. This common sense program gives you instant fingertip access to a wide range of information about your income and expenses. Single keystroke commands help you pay bills, keep track of deductible and non-deductible items, correct mistakes, change dates, and reconcile your checkbook. This program even prints checks and addresses them automatically. *Quick Check* is written in CB80 native code. It is fast, accurate, and forgiving. No slowdown for sorting.

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Public Domain Pak

The Free Software Handbook is chock full of documentation, reviews, and commentary on the use and abuse of the best 70 CP/M public domain programs. It might cost a dedicated hacker hundreds of hours and maybe thousands of dollars to track down this box full of goodies. Super CP/M utilities like Unerase, D.Com, and RPIP are here. This bundle of free software includes Bio.Com, Wumpus.Com, Adventure.Com, Food.Com, and dozens of other popular programs too.

If you want to share in the free software bonanza but don't have the time to search through piles of useless software to find a few precious gems, this book is for you. The list price of *The Free Software Handbook* is $17.95. Central's price is $15.95. However, QX-10 users can now get both *The Free Software Handbook* and all 70 programs reviewed in the book for $49. Save yourself the expense, and time and effort of compiling these programs. Order the *Free Software Handbook* and companion programs today.

The Free Software Handbook is published by PeopleTalk Associates. The authors looked at thousands of programs. They challenge readers to find better ones. It can't be done.

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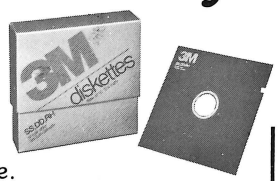

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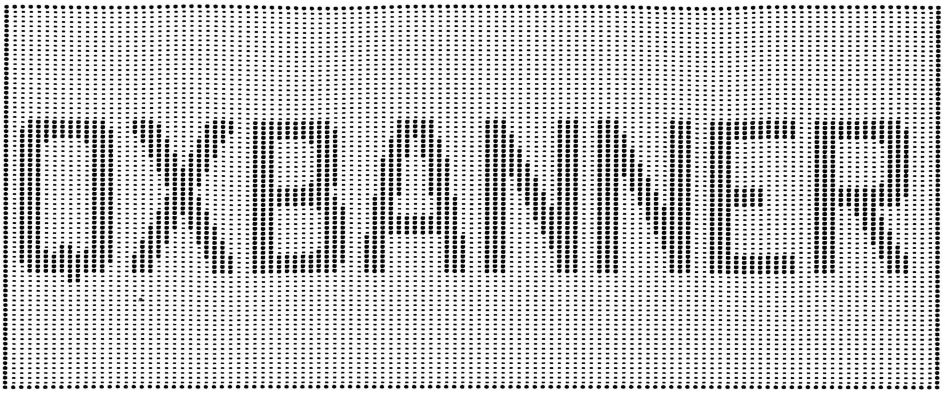

By Jerry & Allen Howell

This program allows you to print "quality" banners to your printer. Banners are printer sideways on your printer, allowing you to create banners up to 240 characters long. The program is versatile in that it allows you to produce banners with or without background shading, with or without a boarder, and allows you to specify any character you desire for your boarder, shading, or you message characters.

QXBANNER also allows you to specify where you wish to place you banner: either in the center, upper, or lower part of your paper. If it is used with a printer setup utility, you can print your banners in any of your printers typestyles. ■

```
10 REM *** QX-10 BANNER PRINTER ***
20 REM
30 REM *** INITIALIZE AND GO TO TITLE ***
40 PRINT : CLEAR : GOTO 1730
50 REM *** IDENTIFY SYMBOL PRINTING CHARACTER ***
60 IF ZP<3 THEN A$="@" ELSE IF ZP=3 THEN A$=" " ELSE IF ZP=4 THEN
A$=CHR$(ZA)
70 REM *** DEFINE CHARACTER PRINTING STRINGS ***
80
B$=A$+A$:C$=A$+B$:D$=A$+C$:E$=A$+D$:F$=A$+E$:G$=A$+F$:H$
=A$+G$:I$=H$+H$:J$=H$+I$:K$=H$+J$:
RETURN
90 REM *** GET MESSAGE CHARACTER'S ASCII CODE ***
100 ZC=ZC+1:VV$=MID$(AA$,ZC,1):ZZ=ASC(VV$)
110 REM *** CHECK IF VALID CHARACTER ***
120 IF ZZ=34 OR ZZ=42 OR ZZ=44 OR ZZ=60 OR ZZ=62 OR ZZ=63 OR ZZ>122 THEN 100
ELSE VV$=CHR$(ZZ)
130 REM *** IDENTIFY SELECTED CHARACTER TO PRINT ***
140 IF ZP=1 THEN A$="@" ELSE IF ZP=2 THEN A$=VV$ ELSE IF ZP=3 THEN A$=" "
ELSE IF ZP=4 THEN A$=CHR$(ZA)
150 REM *** PRINT TWO BACKGROUND LINES ***
160 GOSUB 80: IF ZC>1 THEN LPRINT Y$V$X$: LPRINT Y$V$X$: GOTO 200 ELSE GOTO
200
170 REM *** RE-USED PROMPT ***
180 PRINT"TYPE SPECIAL CHARACTER'S ASCII CODE AND PRESS <ENTER>": RETURN
190 REM *** CHARACTER PRINTING GOTO's ( IN ASCII CODE-31 ORDER ) ***
200 ON ZZ-31 GOTO 510,520,100,420,440,460,480,540,550,580,100,400,100,600,620,640,670,
690,710,740,780,800,820,840,870
210 ON ZZ-56 GOTO 890,100,910,100,930,100,100,940,970,1000,1020,1040,1080,1100,1120,
1140,1160,1180,1220,1240,1260,1280,1300,1320,1340,1360,1390,1430,1450,1470,1500,1530,
1560,1590,1620
220 REM *** Print vertical part of letters BEFHIDKLMNPRT ***
230 FOR Z=1 TO 3: LPRINT Y$K$X$: NEXT : RETURN
240 REM *** Print center part of 3 or 8 ***
250 FOR Z=1 TO 2: LPRINT Y$D$S$M$D$S$M$D$X$:NEXT Z:RETURN
260 REM *** Print center part of 6 ***
270 FOR Z=1 TO 3:LPRINT Y$D$S$M$D$S$M$D$X$:NEXT Z:RETURN
280 REM *** Print center part of 5 B E or S ***
290 FOR Z=1 TO 4
300 LPRINT Y$D$S$M$D$S$M$D$X$: NEXT Z: RETURN
310 REM *** Print left side of C G O Q or 0 ***
320 LPRINT Y$M$J$D$M$X$: LPRINT Y$K$X$: LPRINT Y$K$X$: LPRINT Y$E$T$Q$E$X$:
RETURN
330 REM *** Print center of C O D or E ***
340 FOR Z=1 TO 4: LPRINT Y$D$U$D$X$: NEXT : RETURN
350 REM *** Print left or right side of T ***
360 FOR Z=1 TO 5: LPRINT Y$U$O$D$X$: NEXT : RETURN
370 REM *** Print center of J U or L ***
380 FOR Z=1 TO 4: LPRINT Y$D$U$O$X$: NEXT : RETURN
390 REM *** Print comma ***
400 GOSUB 60: LPRINT W$YY$A$L$D$U$O$X$: LPRINT W$YY$F$U$O$X$: LPRINT
W$YY$L$E$U$O$X$: GOTO 100
410 REM *** Set top line lower and upper margins ***
420 Y$=W$+V$+P$+Q$:X$=N$+W$:YY$=V$+R$+M$:XX$=L$:GOTO 100
430 REM *** Print $ ***
440 LPRINT Y$M$F$S$H$F$M$X$: FOR Z=1 TO 2: LPRINT Y$H$Q$I$B$X$: NEXT : LPRINT
Y$E$L$S$E$S$E$X$: LPRINT Y$D$S$M$D$S$M$D$X$: FOR Z=1 TO 2: LPRINT
W$YY$K$D$XX$W$: NEXT : LPRINT Y$D$S$M$D$S$M$D$X$: GOTO 1410
450 REM *** Set center line lower and upper margins ***
460 Y$=W$+T$+R$:X$=R$+T$+W$:YY$=T$+P$:XX$=P$+T$:GOTO 100
470 REM *** Set bottom line lower and upper margins ***
480 REM
490 Y$=W$+N$:X$=V$+P$+Q$+W$:YY$=L$:XX$=V$+R$+M$: GOTO 100
500 REM *** Print ! ***
510 FOR Z=1 TO 7: LPRINT Y$V$X$: NEXT : GOTO 100
520 GOSUB 60; FOR Z=1 TO 3: LPRINT W$YY$D$N$J$E$XX$W$: NEXT : GOTO 100
530 REM *** Print " (use two for quotation marks) ***
540 GOSUB 60: LPRINT Y$U$N$B$L$D$XX$W$: LPRINT Y$U$O$F$XX$W$: LPRINT
Y$U$P$E$XX$W$: GOTO 100
550 REM *** Print ( ***
560 GOSUB 60: LPRINT Y$S$I$S$X$: LPRINT Y$O$J$O$X$: LPRINT Y$H$T$H$X$: LPRINT
W$YY$F$U$F$XX$W$: GOTO 100
570 REM *** Print ) ***
580 GOSUB 60: LPRINT W$YY$F$U$F$XX$W$: LPRINT Y$H$T$H$X$: LPRINT
Y$O$J$O$X$: LPRINT Y$S$I$S$X$: GOTO 100
590 REM *** Print - ***
600 GOSUB 60: FOR Z=1 TO 8: LPRINT Y$S$Q$D$Q$S$X$: NEXT : GOTO 100
610 REM *** Print . ***
620 GOSUB 60: FOR Z=1 TO 3: LPRINT Y$D$U$O$X$: NEXT : GOTO 100
630 REM *** Print / ***
640 GOSUB 60: LPRINT W$YY$F$U$O$X$: LPRINT W$YY$L$G$U$M$X$: LPRINT
Y$M$H$T$Q$X$: LPRINT Y$P$H$T$N$X$: LPRINT Y$S$H$T$X$: LPRINT Y$S$N$H$S$P$X$:
LPRINT Y$S$Q$H$S$M$X$: LPRINT Y$T$L$H$R$X$
650 LPRINT Y$T$O$H$O$X$: LPRINT Y$T$R$H$L$X$: LPRINT Y$U$M$G$L$XX$W$:
LPRINT Y$U$O$F$XX$W$: GOTO 100
660 REM *** Print 0 ***
670 GOSUB 320: FOR Z=1 TO 3: LPRINT Y$D$U$D$X$: NEXT : GOTO 1060
680 REM *** Print 1 ***
690 LPRINT Y$D$U$B$M$X$: LPRINT Y$J$G$L$X$: LPRINT Y$K$X$: LPRINT Y$K$X$:
LPRINT Y$D$U$O$X$: GOTO 100
700 REM *** Print 2 ***
710 LPRINT Y$H$T$F$M$X$: LPRINT Y$H$C$P$S$H$X$: LPRINT Y$H$E$N$S$H$X$:
LPRINT Y$D$O$G$S$O$E$X$: LPRINT Y$D$R$E$S$O$D$X$: LPRINT Y$D$S$E$S$N$D$X$:
LPRINT Y$D$S$L$E$S$M$D$X$: LPRINT Y$D$S$M$E$S$E$X$
720 LPRINT Y$D$S$N$A$I$X$: LPRINT Y$D$S$O$I$X$: LPRINT Y$D$S$Q$H$D$M$X$:
GOTO 100
730 REM *** Print left side and center of 3 ***
740 LPRINT Y$M$F$T$F$M$X$: FOR Z=1 TO 2: LPRINT Y$H$T$H$X$: NEXT : LPRINT
Y$E$T$Q$E$X$: GOSUB 250
750 REM *** Print right side of 3 or B ***
760 LPRINT Y$D$S$M$E$S$E$X$: LPRINT Y$E$S$C$I$X$: LPRINT Y$K$X$: LPRINT
Y$I$M$D$H$M$X$: LPRINT Y$M$D$H$T$M$X$: GOTO 100
770 REM *** Print 4 ***
780 LPRINT Y$S$D$O$T$X$: LPRINT Y$S$G$L$T$X$: LPRINT Y$S$H$B$Q$S$X$: LPRINT
Y$S$D$L$H$S$N$X$: LPRINT Y$S$D$O$H$S$X$: LPRINT Y$S$D$R$H$P$X$: LPRINT
Y$S$D$S$M$H$M$X$: GOSUB 230: FOR Z=1 TO 2: LPRINT Y$S$D$O$T$X$: NEXT : GOTO
100
790 REM *** Print 5 ***
800 LPRINT Y$M$F$Q$B$I$X$: FOR Z=1 TO 2: LPRINT Y$H$Q$B$I$X$: NEXT : LPRINT
Y$E$L$S$D$M$S$D$X$: GOSUB 270: LPRINT Y$E$S$E$M$S$D$X$: FOR Z=1 TO 2: LPRINT
Y$I$B$M$S$D$X$: NEXT : LPRINT Y$M$H$F$S$O$D$X$: GOTO 100
810 REM *** Print 6 ***
820 LPRINT Y$M$J$D$M$X$: LPRINT Y$K$X$: LPRINT Y$K$X$: LPRINT
Y$E$S$D$M$S$E$X$: GOSUB 270: LPRINT Y$E$S$E$L$S$E$X$: FOR Z=1 TO 2: LPRINT
Y$I$B$Q$H$X$: NEXT : LPRINT Y$M$H$F$S$F$M$X$: GOTO 100
830 REM *** Print 7 ***
840 LPRINT Y$B$M$U$D$X$: LPRINT Y$E$T$R$D$X$: LPRINT Y$H$T$O$D$X$: LPRINT
Y$N$H$L$T$D$X$: LPRINT Y$Q$H$Q$S$D$X$: LPRINT Y$S$L$H$N$S$D$X$: LPRINT
Y$S$O$H$S$D$X$: LPRINT Y$S$R$H$P$D$X$: LPRINT Y$T$M$H$F$X$: LPRINT
Y$T$P$H$C$X$
850 LPRINT Y$U$H$X$: GOTO 100
860 REM *** Print 8 ***
870 LPRINT Y$M$D$H$M$T$X$: LPRINT Y$I$M$D$H$M$X$: LPRINT Y$K$X$: LPRINT
Y$E$S$I$C$X$: LPRINT Y$D$M$S$E$S$E$X$: GOSUB 250: GOTO 760
880 REM *** Print 9 ***
890 LPRINT Y$M$F$S$H$F$M$X$: FOR Z=1 TO 2: LPRINT Y$H$Q$B$I$X$: NEXT : LPRINT
Y$E$L$S$E$S$E$X$: GOSUB 270: LPRINT Y$E$M$S$D$S$E$X$: LPRINT Y$K$X$: LPRINT
Y$K$X$: LPRINT Y$M$J$D$M$X$: GOTO 100
```

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CP/M requires 64K, MSDOS 128K memory.	
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```
900 REM *** Print ; ***
910 GOSUB 60: LPRINT Y$B$L$D$O$D$T$L$X$: LPRINT Y$L$F$O$D$L$T$X$: LPRINT
Y$M$E$O$D$T$L$X$: GOTO 100
920 REM *** Print = ***
930 GOSUB 60: FOR Z=1 TO 7: LPRINT Y$M$S$D$O$D$M$S$X$: NEXT : GOTO 100
940 REM *** Print : ***
950 GOSUB 60: FOR Z=1 TO 3: LPRINT Y$M$S$D$O$D$M$S$X$: NEXT : GOTO 100
960 REM *** Print'A ***
970 LPRINT Y$H$U$X$: LPRINT Y$I$T$X$: LPRINT Y$J$S$X$: LPRINT Y$S$I$D$O$X$:
LPRINT Y$S$D$O$I$X$: LPRINT Y$S$D$S$O$H$X$: LPRINT Y$S$D$T$D$X$: LPRINT
Y$S$D$S$O$H$X$: LPRINT Y$S$D$O$I$X$: LPRINT Y$S$I$D$O$X$
980 LPRINT Y$J$S$X$: LPRINT Y$I$T$X$: LPRINT Y$H$U$X$: GOTO 100
990 REM *** Print B ***
1000 GOSUB 230: GOSUB 290: GOTO 760
1010 REM *** Print C ***
1020 GOSUB 320:GOSUB 340: LPRINT Y$E$T$Q$E$X$: FOR Z=1 TO 2: LPRINT
Y$H$T$H$X$: NEXT : LPRINT Y$M$F$T$F$M$X$: GOTO 100
1030 REM *** Print left side and center of D ***
1040 GOSUB 230: GOSUB 340: LPRINT Y$D$U$D$X$
1050 REM *** Print right side of D O Q or 0 ***
1060 LPRINT Y$E$T$Q$E$X$: LPRINT Y$K$X$: LPRINT Y$K$X$: LPRINT Y$M$J$D$M$X$:
GOTO 100
1070 REM *** Print E ***
1080 GOSUB 230: GOSUB 290: GOSUB 340: GOTO 100
1090 REM *** Print F ***
1100 GOSUB 230: FOR Z=1 TO 4: LPRINT Y$S$Q$D$M$S$D$X$: NEXT : FOR Z=1 TO 4:
LPRINT Y$U$O$D$X$: NEXT : GOTO 100
1110 REM *** Print G ***
1120 GOSUB 320: FOR Z=1 TO 3: LPRINT Y$D$U$D$X$: NEXT Z:LPRINT
Y$D$Q$D$S$Q$D$X$: LPRINT Y$E$P$D$S$P$E$X$: FOR Z=1 TO 2: LPRINT
Y$H$F$S$M$H$X$: NEXT : LPRINT Y$M$D$H$M$S$F$M$X$: GOTO 100
1130 REM *** Print H ***
1140 GOSUB 230: FOR Z=1 TO 6: LPRINT Y$S$Q$D$Q$S$X$: NEXT : GOSUB 230: GOTO
100
1150 REM *** Print I ***
1160 LPRINT Y$D$U$D$X$: GOSUB 230: LPRINT Y$D$U$D$X$: GOTO 100
1170 REM *** Print left side of J ***
1180 LPRINT Y$M$F$U$X$: LPRINT Y$H$U$X$: LPRINT Y$H$U$X$: LPRINT Y$E$N$U$X$
1190 REM *** Print center and right side of J or U ***
1200 GOSUB 380: LPRINT Y$E$U$N$X$: LPRINT Y$K$X$: LPRINT Y$K$X$: LPRINT
Y$M$J$F$X$: GOTO 100
1210 REM *** Print K ***
1220 GOSUB 230: LPRINT Y$S$N$G$Q$S$X$: LPRINT Y$S$Q$G$N$S$X$: LPRINT
Y$S$O$D$H$S$X$: LPRINT Y$S$L$H$M$H$P$X$: LPRINT Y$Q$H$S$H$M$X$: LPRINT
Y$N$H$S$Q$G$X$: LPRINT Y$H$T$O$D$X$: LPRINT Y$E$U$L$B$X$: LPRINT
Y$C$U$P$X$: GOTO 100
1230 REM *** Print L ***
1240 GOSUB 230: GOSUB 380: GOSUB 380: GOTO 100
1250 REM *** Print M ***
1260 GOSUB 230: LPRINT Y$T$M$H$B$O$X$: LPRINT Y$S$Q$H$B$S$X$: LPRINT
Y$S$M$H$B$O$S$X$: LPRINT Y$Q$H$B$T$X$: LPRINT Y$S$M$H$B$O$S$X$: LPRINT
Y$S$Q$H$B$S$X$: LPRINT Y$T$M$H$B$O$X$: GOSUB 230: GOTO 100
1270 REM *** Print N ***
1280 GOSUB 230: LPRINT Y$T$O$H$A$N$X$: LPRINT Y$T$L$A$H$Q$X$: LPRINT
Y$S$Q$A$H$L$S$X$: LPRINT Y$S$N$A$H$O$S$X$: LPRINT Y$S$H$A$R$S$X$: LPRINT
Y$P$A$H$M$T$X$: GOSUB 230: GOTO 100
1290 REM *** Print O ***
1300 GOSUB 320: GOSUB 340: GOTO 1060
1310 REM *** Print P ***
1320 GOSUB 230: FOR Z=1 TO 5: LPRINT Y$S$Q$D$M$S$D$X$: NEXT : LPRINT
Y$S$Q$E$S$E$X$: FOR Z=1 TO 2: LPRINT Y$S$Q$I$B$X$: NEXT : LPRINT Y$T$H$F$M$X$:
GOTO 100
1330 REM *** Print Q ***
1340 GOSUB 320: LPRINT Y$D$U$D$X$: LPRINT Y$F$T$Q$D$X$: LPRINT
W$YY$H$T$Q$D$X$: LPRINT W$YY$F$U$D$X$: GOTO 1060
1350 REM *** Print R ***
1360 GOSUB 230: LPRINT Y$S$Q$D$S$M$D$X$: LPRINT Y$S$Q$D$S$M$D$X$: LPRINT
Y$S$O$F$S$M$D$X$: LPRINT Y$S$L$H$A$S$M$D$X$: LPRINT Y$Q$H$D$M$S$D$X$:
LPRINT Y$N$H$A$M$E$S$E$X$: LPRINT Y$H$A$P$I$B$X$: LPRINT Y$F$S$I$B$X$
1370 LPRINT Y$D$S$O$H$F$M$X$: GOTO 100
1380 REM *** Print left side and center of S ***
1390 LPRINT Y$M$F$S$H$F$M$X$: FOR Z=1 TO 2: LPRINT Y$H$Q$I$B$X$: NEXT :
LPRINT Y$E$L$S$E$S$E$X$: GOSUB 290
1400 REM *** Print right side of S or $ ***
1410 LPRINT Y$E$S$E$S$L$E$X$: FOR Z=1 TO 2: LPRINT Y$I$B$Q$H$X$: NEXT : LPRINT
Y$M$H$F$S$F$M$X$: GOTO 100
1420 REM *** Print T ***
1430 GOSUB 360: GOSUB 230: GOSUB 360: GOTO 100
1440 REM *** Print U ***
1450 LPRINT Y$M$F$J$X$: LPRINT Y$K$X$: LPRINT Y$K$X$: LPRINT Y$E$N$U$X$: GOTO
1200
1460 REM *** Print V ***
1470 LPRINT Y$U$H$X$: LPRINT Y$T$I$X$: LPRINT Y$S$M$I$F$X$: LPRINT
Y$Q$I$C$R$X$: LPRINT Y$N$H$F$S$R$X$: LPRINT Y$H$C$T$P$X$: LPRINT Y$G$U$L$X$:
LPRINT Y$H$C$T$P$X$: LPRINT Y$N$H$F$S$R$X$: LPRINT Y$Q$I$C$R$X$: LPRINT
Y$S$M$I$F$X$
1480 LPRINT Y$T$I$X$: LPRINT Y$U$H$X$: GOTO 100
1490 REM *** Print W ***
1500 LPRINT Y$T$Q$B$H$X$: LPRINT Y$S$O$D$I$X$: LPRINT Y$K$X$: LPRINT
Y$I$G$L$S$X$: LPRINT Y$H$E$N$T$X$: LPRINT Y$P$H$F$P$S$X$: LPRINT
Y$S$M$H$G$R$X$
1510 LPRINT Y$T$H$A$R$X$: LPRINT Y$S$M$H$G$R$X$: LPRINT Y$P$H$F$P$S$X$:
LPRINT Y$H$E$N$T$X$: LPRINT Y$I$G$L$S$X$: LPRINT Y$K$X$: LPRINT Y$S$O$D$I$X$:
LPRINT Y$T$Q$B$H$X$: GOTO 100
1520 REM *** Print X ***
1530 LPRINT Y$D$L$U$C$X$: LPRINT Y$G$T$O$E$X$: LPRINT Y$H$B$S$Q$H$X$: LPRINT
Y$N$H$B$S$H$B$L$X$: LPRINT Y$Q$H$B$M$H$B$O$X$: LPRINT Y$L$S$I$R$X$
1540 LPRINT Y$S$O$H$B$S$M$X$: LPRINT Y$L$S$I$R$X$: LPRINT
Y$Q$H$B$M$H$B$O$X$: LPRINT Y$N$H$B$S$H$B$L$X$: LPRINT Y$H$B$S$Q$H$X$:
LPRINT Y$G$T$O$E$X$: LPRINT Y$D$L$U$C$X$: GOTO 100
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```
1550 REM *** Print Y ***
1560 LPRINT Y$U$O$D$X$: LPRINT Y$U$H$X$: LPRINT Y$T$O$D$H$X$: LPRINT
Y$T$H$D$O$X$: LPRINT Y$S$O$H$D$S$X$: LPRINT Y$I$D$O$S$X$: LPRINT Y$I$T$X$:
LPRINT Y$I$D$O$S$S$X$: LPRINT Y$S$O$H$D$S$X$: LPRINT Y$T$H$D$O$X$: LPRINT
Y$T$O$D$H$X$
1570 LPRINT Y$U$H$X$: LPRINT Y$U$O$D$X$: GOTO 100
1580 REM *** Print Z ***
1590 LPRINT Y$D$U$D$X$: LPRINT Y$G$T$P$D$X$: LPRINT Y$H$B$M$T$D$X$: LPRINT
Y$H$E$S$R$D$X$: LPRINT Y$D$N$H$A$S$O$D$X$: LPRINT Y$D$Q$H$A$L$S$D$X$:
LPRINT Y$D$L$S$H$A$Q$D$X$: LPRINT Y$D$S$O$H$A$N$D$X$: LPRINT
Y$D$S$R$H$E$X$
1600 LPRINT Y$D$M$T$H$B$X$: LPRINT Y$D$T$P$G$X$: LPRINT Y$D$U$D$X$: GOTO 100
1610 REM *** Print one background line and right-hand border ***
1620 LPRINT Y$V$X$: LPRINT STRING$(ZT,W$)
1630 REM *** Do five linefeeds ***
1640 FOR Z=1 TO 5: LPRINT " ": NEXT
1650 REM *** Display ANOTHER COPY? prompt ***
1660 PRINT:PRINT "DO YOU WANT ANOTHER COPY (Y/N)?";:PRINT
1670 YN$=INKEY$: IF YN$="Y" THEN 2190 ELSE IF YN$<>"N" THEN 1670
1680 REM *** Display NEW BANNER? prompt ***
1690 PRINT: PRINT "DO YOU WANT A NEW BANNER (Y/N)?";
1700 YN$=INKEY$:IF YN$="Y" THEN PRINT CHR$(26):GOTO 1920 ELSE IF YN$<>"N"
THEN 1700
1710 PRINT CHR$(26):PRINT "End of QXBANNER program.....Thank you!":FOR DL=1 TO
2000:NEXT DL:PRINT CHR$(26):END
1720 REM *** Program title ***
1730 PRINT CHR$(26): PRINT: FOR Z=1 TO 30: PRINT"BANNER PRINTER ";: NEXT Z
1740 PRINT:PRINT
1750 PRINT TAB(19)"Original program by Francis S. Kalinowski":PRINT
1760 PRINT TAB(16)"Modified for Epson QX-10 by Allen & Jerry Howell":PRINT:PRINT
1770 PRINT TAB(13)"IS YOUR <SHIFT-LOCK> ON, AND THE PRINTER READY (Y/N)";
1780 INPUT A$
1790 IF A$<>"Y" THEN GOTO 1770
1800 REM *** Program description ***
1810 PRINT CHR$(26) : PRINT"I PRINT BANNERS WITH 32-COLUMN-HIGH CHARACTERS
ON ANY ONE OF THREE LINES.": PRINT
1820 PRINT "A BANNER MAY HAVE A CLEAR OR SYMBOL-CHARACTER SHADED
BORDER AND/OR BACKGROUND.": PRINT
1830 PRINT "PROMPTS LET YOU SELECT THE BACKGROUND, BORDER, AND BANNER
LETTER/NUMBER PRINTING"
1840 PRINT "CHARACTERS. EXCEPT WHEN A BLANK OR A SPECIAL CHARACTER IS
SELECTED, THE PROGRAM": PRINT
1850 PRINT "USES THE @ SIGN TO PRINT MOST SYMBOLS. A FINAL PROMPT ASKS FOR
THE BANNER"
1860 PRINT
1870 PRINT "MESSAGE TO BE PRINTED. THE BANNER MESSAGE MAY BE UP TO 240
CHARACTERS / SPACES"
1880 PRINT : PRINT"LONG. WHEN THE BANNER IS PRINTED, YOU MAY SELECT TO
PRINT ANOTHER COPY, PRINT A NEW BANNER, OR QUIT.":PRINT:PRINT:PRINT
1890 REM *** Set banner width to 80 columns ***
1900 ZL=3:ZT=80
1910 INPUT "PRESS <RETURN> TO CONTINUE ",AA$ : PRINT CHR$(26)
1920 REM *** Printing mode control codes (if needed by printer) ***
1930 REM **** THIS STATEMENT IS RESERVED FOR SPECIAL CODES REQUIRED TO SET
UP YOUR PRINTER ****
1940 REM *** Banner background prompt ***
1950 PRINT : PRINT "PICK YOUR BACKGROUND, 1 TO 4": PRINT : PRINT"1. CLEAR
(BLANK)": PRINT"2. LIGHTLY SHADED (:)": PRINT "3. HERRINGBONE SHADED (>)":
PRINT"4. SPECIAL SHADED
1960 PRINT : INPUT "ENTER THE NUMBER OF YOUR CHOICE ",Z$:ZE=VAL(Z$)
1970 IF ZE<1 OR ZE>4 THEN 1960 ELSE IF ZE=1 THEN L$=" " ELSE IF ZE=2 THEN
L$=":" ELSE IF ZE=3 THEN L$="<" ELSE IF ZE=4 THEN GOSUB 180: PRINT "";: INPUT
"";ZD:L$=CHR$(ZD)
1980 REM *** Banner border prompt ***
1990 PRINT CHR$(26) : PRINT"WHICH BORDER DO YOU WANT?":PRINT: PRINT"1. #":
PRINT"2, *": PRINT"3. +": PRINT"4. %": PRINT"5. NONE (BLANK)": PRINT"6.
SPECIAL CHARACTER
2000 INPUT Z$:ZF=VAL(Z$)
2010 IF ZF<1 OR ZF>6 THEN 2010 ELSE IF ZF=1 THEN W$="#" ELSE IF ZF=2 THEN
W$="*" ELSE IF ZF=3 THEN W$="+" ELSE IF ZF=4 THEN W$="%" ELSE IF ZF=5
THEN W$=" " ELSE IF ZF=6 THEN GOSUB 180: PRINT " ";: INPUT "";ZB:W$=CHR$(ZB)
2020 REM *** Message printing character promp ***
2030 PRINT CHR$(26) : PRINT "WHICH BANNER MASSAGE PRINTING CHARACTER DO
YOU WANT?":PRINT:PRINT"1. @ SIGN": PRINT"2. MESSAGE CHAR'S CHARACTER":
PRINT"3. NONE (BLANK)": PRINT"4. SPECIAL CHARACTER
2040 INPUT Z$:ZP=VAL(Z$)
2050 IF ZP<1 OR ZP>4 THEN 2040 ELSE IF ZP=4 THEN GOSUB 180: PRINT "";: INPUT
"";ZA
2060 REM *** Banner message character limitations ***
2070 PRINT CHR$(26) : PRINT "ONLY LETTERS, NUMBERS, SPACES, AND SYMBOLS
;'().!/= AND $ MAY BE USED AS MESSAGECHARACTERS. IF NEEDED, USE + IN
MESSAGE FOR A COMMA IN BANNER PRINTOUT OR USE @": PRINT
2080 PRINT"FOR A COLON IN PRINTOUT. PREFIX MESSAGE SEGMENTS WITH:":PRINT
2090 PRINT "                    (# FOR TOP LINE)":PRINT
2100 PRINT "                    (% FOR CENTER LINE)":PRINT
2110 PRINT "                    (& FOR BOTTOM LINE)":PRINT:PRINT
2120 REM *** Banner message prompt ***
2130 PRINT"ENTER YOUR BANNER MESSAGE:":PRINT
2140 INPUT "",AA$
2150 REM *** Add end-of-message flag ***
2160 AA$=AA$+CHR$(91):M=-2
2170 REM *** Define background printing strings ***
2180
M$=L$+L$:N$=L$+M$:O$=L$+N$:P$=L$+O$:Q$=L$+P$:R$=L$+Q$:S$
=L$+R$:T$=S$+S$:U$=S$+T$:V$=S$+U$
2190 REM *** Print left-hand border ***
2200 LPRINT STRING$(ZT,W$)
2210 Y$=W$+T$+R$:X$=R$+T$+W$:YY$=T$+P$:XX$=P$+T$
2220 REM *** Print 1 background line and go to read-message routine ***
2230 ZC=0: LPRINT Y$V$X$: GOTO 100
```

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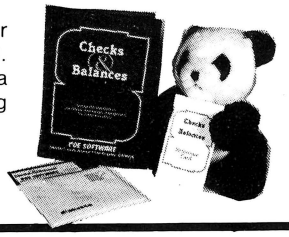

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